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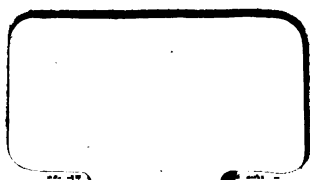
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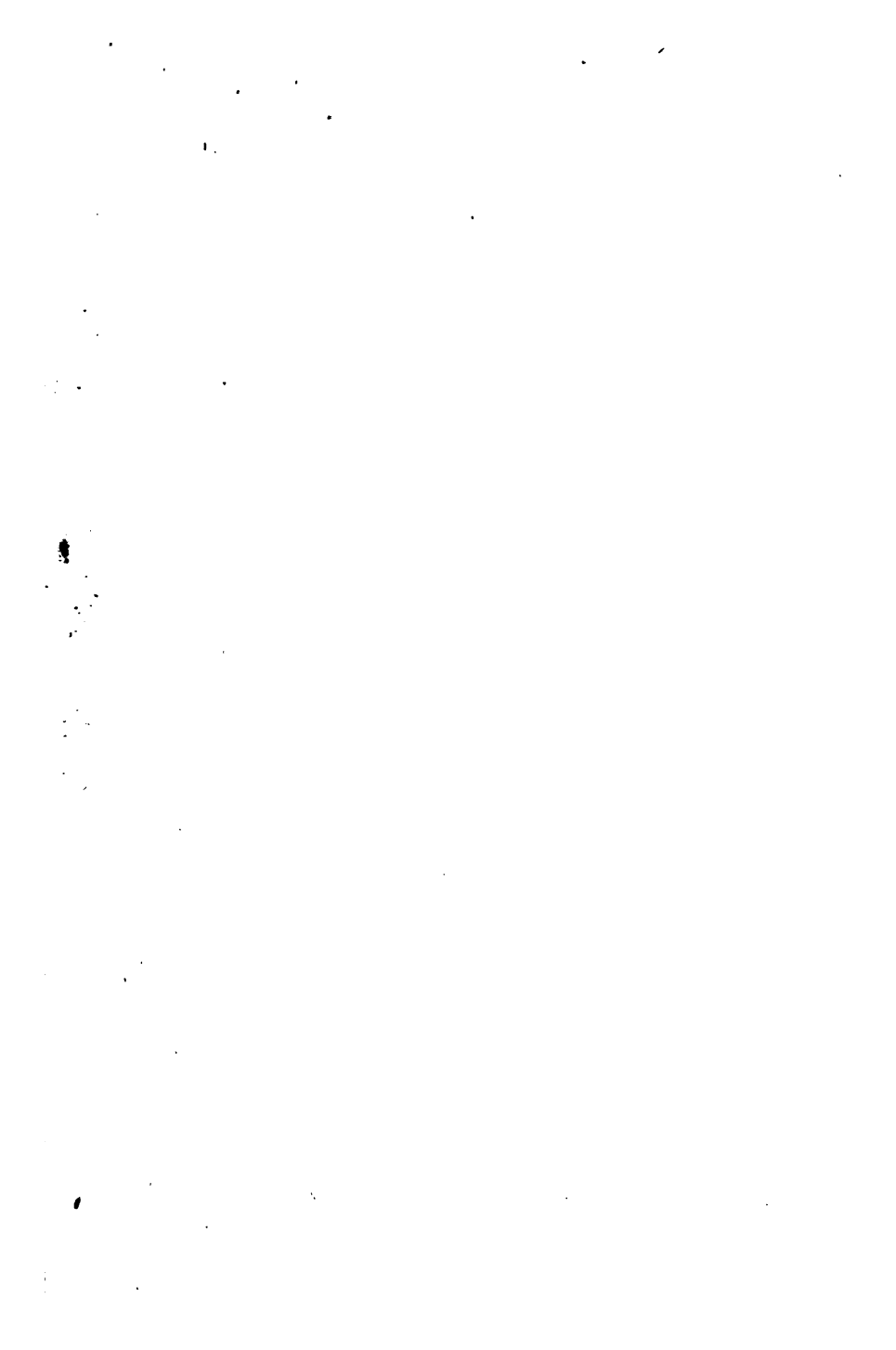
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THE Practical Medicine Series

COMPRISING TEN VOLUMES ON THE YEAR'S PROGRESS
IN MEDICINE AND SURGERY

UNDER THE GENERAL EDITORIAL CHARGE OF
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VOLUME IX SKIN AND VENEREAL DISEASES

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INTRODUCTION.

A review of the literature on cutaneous medicine for the year shows very little diminution in its volume owing to the activities of the war. Syphilis and the venereal diseases have been well studied in the armies in the field, and emergency treatment has been devised, while prophylactic measures have been given trial on a large scale. Attention has been called to the possible spread of leprosy due to contact of soldiers in the fields with the disease where it is endemic. Trench fighting, under the conditions imposed during cold weather, has produced numerous cases of erythema and gangrene of the feet, similar to frost-bite, due in these instances to temperature above the freezing point.

In this country, the Wassermann reaction has been systematically studied and reported upon. This important reaction, on account of conflicting reports from different laboratories, was beginning to be discredited to some extent, but an analysis of the reports shows that the test itself is still invaluable; the requirement necessary to place it in an unassailable position is standardization of technique. Many reports of cholesterinized antigens appear to demonstrate their utility when properly controlled. They are especially valuable in regulating treatment. The inability of importers to get salvarsan in adequate quantities, owing to the war, demonstrates the wide field this drug has acquired in the treatment of syphilis. At present, the situation demands the release of the drug as prepared in Germany, or removal of restrictions so that it may be manufactured in this country in adequate amount to supply the large demand.

Epitheliomata have been intensively studied, and attempts have been made at more rational classification. Precancerous conditions have received attention through many contributions. Blastomycosis is reported from Denver, thus enlarging its geographical distribution.

INTRODUCTION.

Radiotherapy is again advancing in favor, due to a better understanding and more widespread employment of the Coolidge tube and the instruments devised for more accurate measurement of the dosage. Radium, also, is being much more generally employed in certain dermatological conditions.

Purpura annularis telangiectodes appears in American literature for the first time with report of an American case and complete discussion of the subject by MacKee, of New York. A new family group of Xeroderma pigmentosum has appeared, and a case of Acanthosis nigricans is reported from Denver.

No startling discoveries have been made, though Rose-nov's work in Herpes zoster opens up a field of importance in the bacteriology of this disease, as did his similar work in Erythema nodosum. Education of the public as to the true character of leprosy has progressed, and the establishment of a national leprosarium to care for the unfortunate victims of the disease is being strongly and widely advised. The attention of the public has also been drawn to the value of a more general enlightenment on the subject of syphilis.

The review which follows is necessarily brief and only a small proportion of the whole is included.

OLIVER S. ORMSBY.

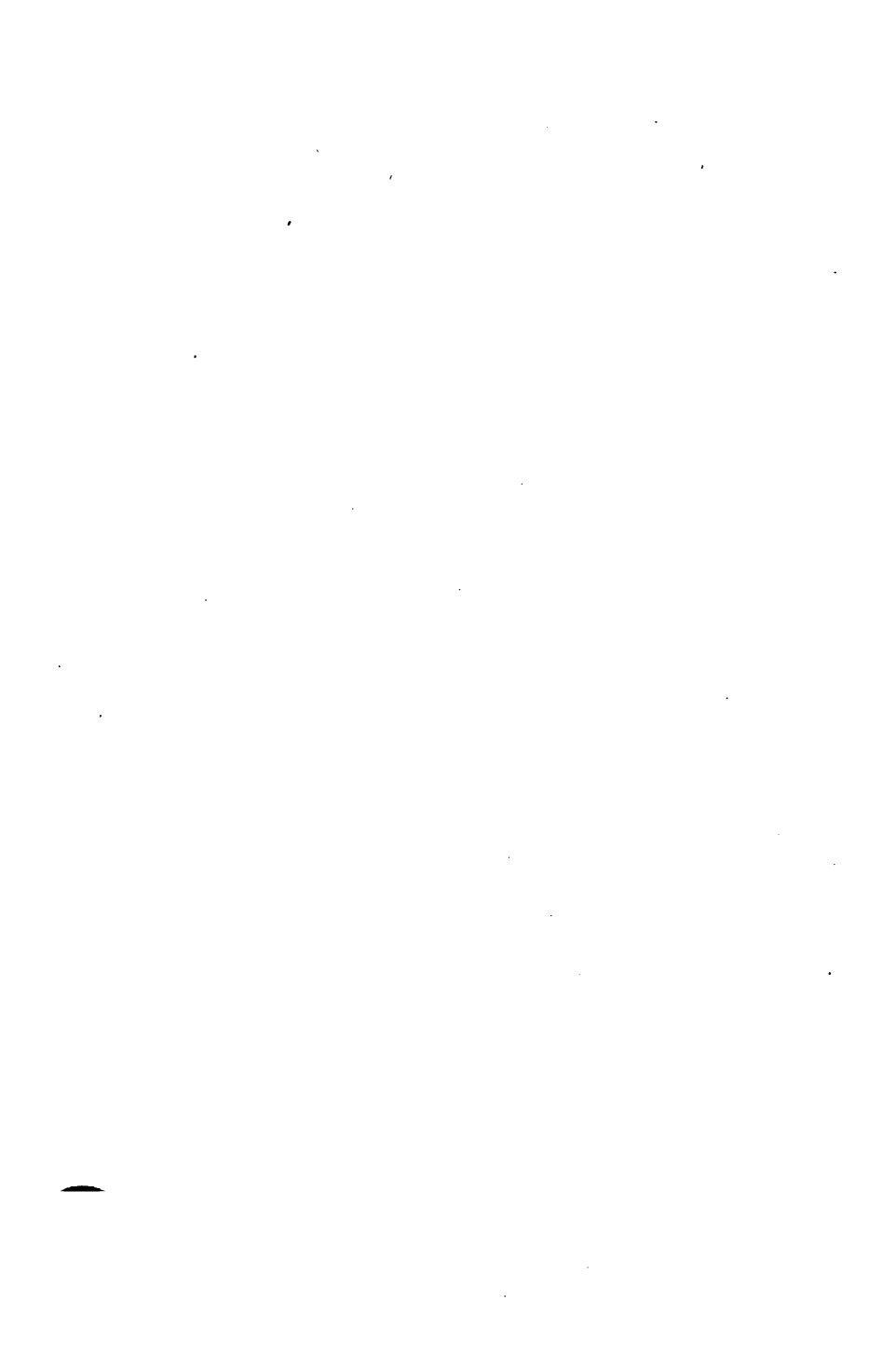
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SKIN AND VENEREAL DISEASES.

DERMATOSES.

Self-Inflicted Eruptions. Stopford-Taylor and Mac-kenna¹ describe four cases of this type of dermatitis. The first was that of a young woman who was accidentally burned with carbolic acid. The burn was treated with carron oil and made good progress. After a week, new lesions occurred around the original burn, which were discrete yellow spots, which later became confluent, forming a yellow pellicle over the back of the hand and extensor aspects of the first and second fingers as far as the tips. These lesions showed improvement and recurrences from time to time and after persistence for several months the factitious nature of the disorder was discovered. The reporters believe that nitric acid was the agent used, although phenol was the original substance which gave the idea.

The second case was that of a young woman, aged 27 years, the subject of various manifestations of hysteria. The eruption was present on the face. The manner in which it had been produced was indicated by the presence in the skin margin surrounding the raw surface of a black line left by the caustic applied, in this case silver nitrate. The patient had recently enjoyed displaying herself in public, but with her face covered with dressings and pieces of plaster, and the reporters believe that the sight of wounded soldiers reacted upon her nervous system and induced the patient to produce this hysterical mimicry.

In case three, a girl of fifteen, had produced lesions on the skin of the face by friction.

(1) Liverpool Med. and Chir. Jour., July, 1915.

In case four, a boy aged 11 years, had produced lesions on the skin of his face with mustard. In this case the motive was to gain sympathy.

The reporters of these cases make a short review of the subject and the various substances employed in the production of these lesions.

Factitious Dermatoses. Several reports on this topic have appeared recently. A group of thirty-four cases is recorded by O. Ormsby¹ with comments on etiology and diagnosis. The majority of these patients were girls and women who presented hysterical stigmata. The lesions described in the various cases varied from simple erythema through all stages of dermatitis, including gangrene and ulceration (see Plates I and II).

To explain the reason for the production of these lesions, all the intricate processes concerned in hysteria are involved. The object in various cases appears to be to escape disagreeable duties or surroundings, to gain attention, interest or pity, or to achieve notoriety. Occasionally, no object is discernible, and these cases are thought to belong to the group in which a dual personality or subconscious state is present. Another point of interest in these cases is that the factitious dermatitis not infrequently follows a traumatic injury, which has been treated by some substance, such as phenol, which is capable of producing the lesions, thus giving the patient the idea and the material with which to carry out the deception.

The materials employed vary. A long list of animal, vegetable, and mineral substances is included in this category. Those most commonly used are phenol, croton oil, cantharides, mustard, various acids and alkalies, lye, cresolin, tartar-emetic ointment, and lysol. Other methods employed have been burning with matches, with pieces of hot metal, or with bottles containing very hot water, and friction with the fingers, sandpaper, and other rough substances. The character of the lesions and the intensity of the inflammation depend not only on the agent employed, but on the

(1) Jour. Amer. Med. Ass'n., Nov. 6, 1915.

PLATE I.



Factitious dermatosis. Case 1.—Ormsby (see page 8).

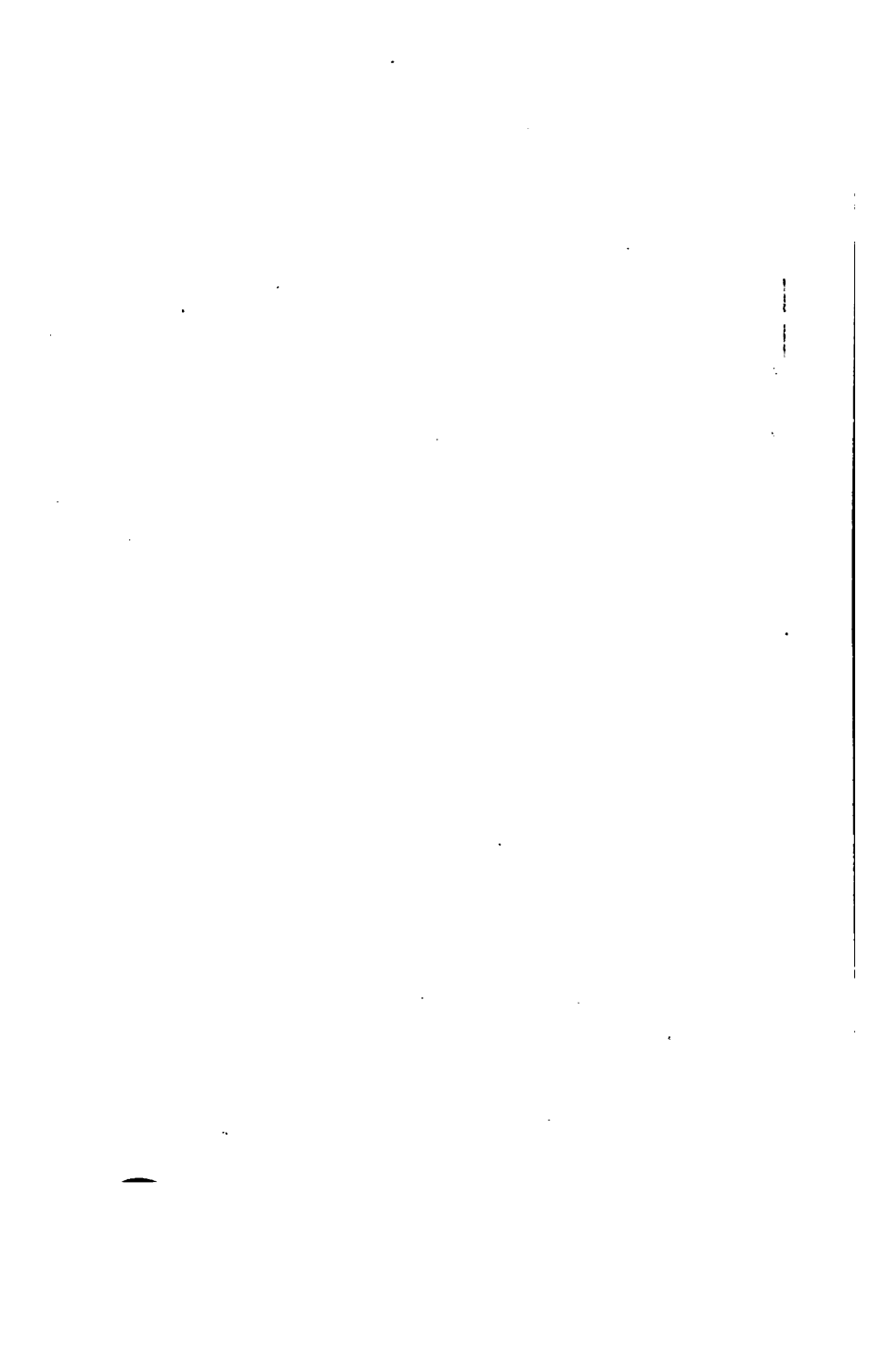


PLATE II.



Factitious dermatosis. A young woman, 17 years old. Duration, 7 weeks. Confessed. The patient was seen after publication of report and is not mentioned.—Ormsby (see page 8).



strength of the solution, the duration of the application, and the tissue resistance.

"The recognition of this disorder is important. The diagnosis is usually not difficult for one familiar with cutaneous disorders, since the lesions, though of a simple inflammatory nature, are different from those of any recognized disorder. The most important points are the following:

"The lesions occur within reach of the patient's hands, and are usually most numerous on regions easily accessible to the right hand. This includes the anterior surface of the body, the left arm, forearm and hand, the lower extremities, and the right side of the face and neck. As a rule, the palms and soles, eyelids, mouth, nose, ears, scalp, and genitals are spared.

"The lesions are always sharply outlined, and of unusual, often fantastic, shape. They appear suddenly, at irregular intervals, usually one or two at a time, and run a fairly rapid course. When fluid caustic is used, it frequently happens that one or more drops run down the skin from one of the lesions, leaving a characteristic streak, which is usually lighter in color and shows a more moderate degree of inflammation than the patch from which it depends. When the caustic is applied with a needle or pin, as is frequently the case in gangrenous areas, the border shows a finely jagged or serrated edge, made by the numerous punctures in the advancing border. When gangrene is present, it is usually very superficial and is separated from the normal skin by a narrow, vivid red line. The fingers, nails, or some article of clothing are often stained by the agent employed. Subjective sensations, usually pain and burning, may be greatly exaggerated by the patient, who will cringe or jump at the slightest touch during examination, and will complain bitterly about the distress caused by the simplest and lightest of dressings. On the other hand, some of the areas are largely anesthetic, and some of these individuals like to exhibit their ability to endure pain. Many of the patients enjoy mystifying their medical attendant by predicting, from twelve to twenty-four

hours in advance, the exact areas on which the new lesions will occur, claiming that during this period they experience in these areas a sense of heat and burning, and other queer sensations.

"The impulse one has is immediately to confront the patient with the charge, and there are several who advocate such a procedure. While occasionally this terminates happily, in the majority of cases it probably would fail. It would therefore work an injustice on the patient, her friends, and the attending physician. A plan pursued by the writer is to instruct the patient in methods of treatment, and during the instruction impress her with the idea that there is no question whatever as to what has produced the lesions, and that if she will faithfully apply the remedies suggested and as faithfully avoid using anything else, she will make a prompt recovery. Then he has the case watched with care, using at a later date, if necessary, fixed dressings; that is, dressings that can not possibly be removed without detection. Or, if driven to extreme measures, the patient is taken to a hospital, where she can be kept under strict surveillance, both day and night, when, by a complete disappearance of the lesions and the non-appearance of new ones, the diagnosis is proved. This, however, does not reveal the causative agent. In an intelligent patient, the appeal to her pride and self-respect has weight. In certain of the cases, no impression is made by such an appeal. It may be that a number of these belong to the group described by Pernet and Towle, those who really do not know that they have inflicted the injuries.

"Further aids to the diagnosis may be found in the general characteristics of these patients, the unusual history of the disorder, the discovery of anesthetic areas, especially of the fauces and conjunctiva, and other evidences of hysteria."

A *résumé* of the results and materials used in this group is as follows:

"Of the thirty-four patients above described, thirty were females; 50 per cent. were under 22 years of age. Trauma preceded the lesions in twelve cases. Of

these, two were burns with acid, two had had antiseptic applications made by a druggist, and two had been treated with carbolyzed salve. Of the thirty-four, thirteen confessed and made an immediate recovery; one case was proved under the care of a nurse, and three under fixed dressings; one other completely recovered after being threatened. Of the total number, twenty-five made complete recovery, three disappeared, one was a degenerate, two gradually recovered after a long time had elapsed, and in two cases the lesions continued. One patient never had lesions in the hospital while under observation, but continued to have them outside.

"Of the thirty-four, it was proved that fourteen used phenol, four probably used phenol, one used lysol, one phenol and other substances, one croton oil, one lye, one sandpaper, one tobacco, one the electric needle and unknown but liquid applications, six entirely unknown substances, and three unknown liquids. It is interesting to note that several patients recovered after being confronted with the materials they had used, even though denying their use. Change of scene in one case induced recovery, and in another the departure of the person whose presence had irritated the patient. In only four of the group was the diagnosis not positively proved, either by confession or by complete recovery of the case under fixed dressings or constant supervision. In the four, however, the evidence was so strong that there was practically no doubt as to the diagnosis."

CONCLUSIONS.

"First, it seems probable that the major portion of cases described as pemphigus gangrenosus are in reality examples of factitious dermatitis. That the major number of cases recorded under the title 'Zoster gangrenosus atypicus' (Kaposi) are of the same type, and also those more recently described under the title of 'dermatitis symmetrica dysmenorrhoeica,' seems probable.

"Second, while the disorder is comparatively rare, it

probably would appear more common if recognized more generally."

Factitious Erythema of the Face. Natalelli and Roger² in a period of four months saw eleven soldiers who developed a diffuse erythema of the face. The color was less vivid than that of erysipelas, and the definition was less sharp. There were numerous small vesicles throughout the area and not limited to the periphery, which dried rapidly into yellow crusts, having a shorter duration than those of eczema. The lesions were usually situated on the cheeks, forehead, submaxillary and mastoid regions. There was no febrile reaction, and no systemic disturbance. Under careful watching, the lesions healed without medication.

The lesions were produced, as a few patients subsequently admitted, by rubbing with irritating substances, usually thapsia.

Such patients frequently had a history of an acute conjunctivitis, or sudden accident, occurring just before an assault was planned.

Dermatitis Symmetrica Dysmenorrhoeica. In 1912, Matzenauer and Polland published in *Archiv für Dermatologie und Syphilis* an article under the above title, in which they described a series of cases which they placed in this category. The photographs accompanying the monograph show young women with vesicular lesions which have the form of streaks and bands, the location of which was obviously determined by the fancy of the patient. The distribution was plainly arbitrary and not unlike that of the war-paint of an American Indian. The lesions were vesicular and urticarial in type, and appeared in the course of from "one-quarter to one-half hour." The patients were neurotic girls, some of whom gave evidence of dysmenorrhea, and upon this more or less disturbed menstruation the diagnosis was based.

Following this article, and evidently inspired by it, appeared five others by German writers. All the cases appear to have been dermatitis factitia.

Two more cases have been recently reported by Krei-

(2) *Presse méd.*, Oct. 25, 1915.

bich³ under the title of *Dermatitis angioneurotica*. Inasmuch as neither of the two girls, who were about 13 years of age, had yet menstruated, the author is unable to label them with the impressive term *dermatitis symmetrica dysmenorrhoeica*, but, nevertheless, he thinks the vesicular lesions, which suddenly appeared on their cheeks and extremities, were probably due to a disturbed ovarian functioning.

Trichotillomania. Under this title are described cases in which patients have an uncontrollable desire to pull out the hairs of the scalp, eyebrows, lashes, or beard. R. Sutton⁴ describes two cases, and Pernet⁵ describes one which occurred in association with factitious lesions of the skin.

In Sutton's first case, the patient was a married woman, aged 27 years, who had always been of a nervous temperament and who had been suffering with the disorder for two years. It was her habit, whenever worried or excited, to pull the hairs out of her eyebrows. As time went on, the habit became stronger. There was no itching or other irritation in the region to account for the selection of this particular locality for the removal of the hair. The parts attacked were the inner extremities of the brows. The skin in the area was perfectly normal, the only change being the absence of hairs.

In Sutton's second case, the patient was a boy aged 14 years, who apparently was perfectly normal physically and mentally, but was of a nervous temperament. In this case, practically all of the hairs on the left side of the head had been pulled out, leaving only a soft, downy new growth. The skin in the area, as in the preceding case, was perfectly normal. The patient stated that it was impossible for him to resist the impulse to jerk out the hairs. The tendency was greatest whenever he was worried or excited.

The case described by the second author was that of a young woman, aged 20 years, whose hair had been

(3) Arch. Derm. Syph., July, 1915.

(4) Jour. Amer. Med. Ass'n., Dec. 12, 1914.

(5) Brit. Jour. Derm., March, 1915.

removed from the scalp in a patchy and irregular manner. In addition to this disorder, the patient suffered with factitious lesions of several kinds. There was no preceding itching, nor were there any changes in the skin of the affected area.

WAR DERMATOSES.

War Dermatoses. Many articles have appeared during the last year concerning the increase of cutaneous disease due to the peculiar conditions under which men are placed who are in the armies at the front. Of interest to us are the cases of those who have suffered with a condition of the feet allied to frost bite. A report on this subject, with a review of similar conditions occurring in other wars, is given by Fearnside.²

The patients the writer saw, who were invalided from the front on account of frost-bite, were not suffering from the disease as ordinarily understood; that is, the cutaneous and other lesions were not due to the actual freezing of the parts, as the temperature in the sections of the country where these soldiers were stationed was not lowered to that degree. In an area of the skin which has been frozen, there are usually changes occurring following the thawing process. These are exhibited as swelling, redness, and vesiculation, and later, if the freezing has been deep, dry gangrene ensues. The tissue loss depends on the duration, the application of cold, and the temperature to which the tissues are reduced. During the process of thawing, there is usually pain, which may be extreme, with some tingling and itching, the latter two symptoms lasting for some time. Healing is accompanied by an inflammatory reaction, which slowly subsides.

The cases of frost-bite seen by Fearnside were not of the degree above described. The temperature of the mud in which the feet were embedded had never fallen sufficiently low to cause actual freezing of the superficial tissues, the symptoms exhibited being apparently due to vascular changes. It is stated that this type of

(2) Brit. Jour. Derm., February, 1915.

frost-bite comes on gradually, and usually affects symmetrical parts of the feet. During the exposure to the low temperature, feelings of stiffness, coldness, itching, numbness, and loss of sensibility in the distal portions of the feet occur. The acute, excruciating pains which occur in case of actual frost-bite do not accompany this form. The condition of the feet in the patients examined, whether gangrenous or merely red and edematous, usually had been discovered by the patient only when he inspected his feet. Other factors in addition to cold which contribute to the production of these lesions are the pressure of the boots, which are frequently kept on for from 3 to 14 days without removal; and the interference with the return circulation through the posture, as the men are prevented from lying down and also from active muscular movement. In all instances, several days had been passed in an upright or squatting posture, with no interval of recumbency and little possibility of sleep. Many men in the trenches had their feet so fixed and embedded in the mud that they were unable to extricate the feet, and any voluntary movement was impossible.

The objective manifestations presented by patients suffering with this type of frost-bite, associated with vascular interference, varied from black gangrene, with death *en masse*, necessitating amputation of both feet at the tarsus or even higher, to a mere erythema and slight swelling of the great toe, the major portion of cases being intermediate between these two extremes.

The clinical manifestations are exhibited first as a blanching or paling of the part, with shrinking of its volume, due to emptying of the blood-vessels. This stage is followed by vasodilatation, with a relatively rapid flow of blood, inducing a pink or red color and some swelling of the part. Later, and for several days, the area remains mottled, marbled, livid blue, or congested. On the toes, the soles of the feet, and the heels, smaller or larger chilblains of ordinary appearance may develop. Toes which on admission are blue or marbled may at the same time be warm to the touch, in which case prompt recovery occurs. If, on the other hand, they are cold

and blue or leaden-gray in color, some loss of tissue ensues. Edema is a common and prominent symptom. This is most marked where the tissues are lax, and was noted especially on the dorsum of the anterior half of the foot. On parts of the feet subjected to local pressure, blisters may form. These may be single or multiple, large or small, and they may have clear contents or be the seat of hemorrhage. The great toe is more often affected than the others. Other regions commonly affected with blisters, chilblains, or hemorrhages are the heels and the pressure points at the base of the great toe and the ball of the little toe. Hemorrhages also occur in the region of the nail-beds and wherever one toe is pressed upon by a neighboring toe. These hemorrhages may cause death and separation of the whole nail. Upon absorption of the hemorrhage, pigmentation and discoloration of the skin remain. The terminal result of the process is desquamation.

When gangrene supervenes, it usually affects both feet symmetrically but unequally. Unless treated with moist applications, it remains as dry gangrene. While occasionally deep, it usually occurs only in the superficial parts of the great, little, or other toes. In mild cases, the gangrenous part is leaden-gray in color; in more severe cases it is black. The necrosed tissues separate by a line of demarcation, leaving a granulating wound.

The tendons are occasionally affected indirectly, and are then taut, producing flexions of the great toe and hyperextension of the other toes, with inversion or eversion of the whole foot. In rare instances, sweating on the dorsum of the foot occurs.

The subjective manifestations vary. Some patients complain of little discomfort; others say that during the time the disorder was developing their feet felt as though they were becoming slowly and progressively more dead; again, as if they were standing on their heels, and the front half of their feet felt wooden. Paresthetic sensations were not prominent; there was rather an abolition of ordinary feeling in the foot. Sensations of coldness, deadness, numbness, tingling, itching, and burning in

the toes and feet, cramps, aches, shooting pains, and gnawing sensations in the legs were all described as occurring at one time or another during the exposure; yet, on the whole, discomfort was not complained of until the objective signs had been observed by the patient. In patients suffering with most severe objective manifestations, few subjective sensations were complained of. In a second group, with slight objective signs, great mental disturbance and suffering were exhibited. The latter were restless at night, complaining of inability to sleep owing to emotional disturbances due to recent experiences. In the cases with active objective signs, sensory interferences such as commonly occur in some forms of peripheral neuritis were at times noteworthy; while in the second group the sensory interferences were more of the type seen in cases of so-called general neuroses, stocking, sock, or slipper anesthesia or hyperesthesia. The progress of the cases was also different, the first group recovering rapidly, while in the second convalescence was prolonged. In the second group, much complaint was made of shooting, gnawing, and aching pains, intensified by movement. Numbness or deadness of the skin of the feet was among the frequent symptoms, and many patients described their sensations as being "like walking on my heels." The patients were generally apprehensive, frequently inquiring as to when gangrene was likely to supervene. Various hyperesthetic and anesthetic phenomena were noted.

Under proper treatment, patients in the first group recovered promptly and completely, while in the second convalescence was uncertain and relapses common. Patients of the latter group were not considered fit to be sent back to the fighting line.

Ecthyma as a War Dermatitis. The ubiquitous staphylococcus in times of peace causes a long list of skin infections, such as impetigo contagiosa and impetigo vulgaris, folliculitis, furunculosis, sycosis, subcutaneous abscesses, and lymphangitis. To this list of diseases war, says Kromayer,³ has added another, namely, ecthyma. This constitutes about one-third of the derm-

7 (3) Deutsch. med. Wochenschr., May, 1915.

atologic cases among the soldiers returning from the Russian campaigns.

Ecthyma, or "*Schmutzgeschwür*," arises from an excoriated and crusted pustule. Healing does not take place beneath the crust; instead, the process extends peripherally, and also deep into the tissues. It eventually becomes a small coin-sized ulcer, which is covered with a pus, blood, and dirt-stained crust. Scarring always follows healing, differing in this respect from impetigo.

The disease is almost invariably complicated by impetigo, furunculosis, and abscesses. The feet, legs, and arms are usually involved, but any part of the body may be affected. One patient had 172 large ulcers.

There is little tendency toward healing. When possible, Kromayer gives a prolonged bath in potassium permanganate (1:4,000) solution, followed by 2 per cent. salicylic acid in vaseline.

ACNITIS.

Acnitis. By many observers, this disorder is believed to be a tuberculide. This view is opposed by several competent investigators. An important study has been made by Ketron.⁴ After a short historical review of the disease, the history of a case is given in part as follows:

"The patient was a carpenter, aged 47. One sister had died of tuberculosis; otherwise the family history was of no importance. In 1908, the patient had had a 'touch of pneumonia,' and at that time had had an eruption of pimples on the back. After this he had been troubled for a short time with boils. No history could be obtained suggesting a syphilitic infection. His wife, however, had had eleven miscarriages. The children, so far as the parents know, have shown no skin blemishes. A blood test taken from the mother in 1911 was said to be 'suspicious of syphilis.'

"The affection began in August, 1913, with the appearance of a few small nodules at the base of the nose and about the nasolabial folds, and despite treatment

(4) Bull. Johns Hopkins Hosp., April, 1915.

with potassium iodide and various salves the process gradually extended to the forehead, chin, and cheeks. There had been no subjective symptoms except a slight tenderness over the nodules when they attained a large size and became secondarily infected.

"We first saw him in December, 1913, four months after the beginning of the disease. A general physical examination showed an old fibrosis of the lungs, most likely of tuberculous origin.

"Scattered over the face were about 150 nodules, which were grouped on the forehead, temples, base of nose, cheeks, and chin. A few were scattered on the sides of the face, eyelids, margins of the ears, and on the skin over the mastoid prominences. The scalp was free except for a small number just inside the hair margin of the forehead. The neck, trunk, extremities, and mucous surfaces were not affected, and no lesions were found on any other part of the body.

"The lesions varied from 1 to 10 mm. in diameter. They were for the most part discrete, although occasionally two or three of the larger nodules were confluent. They were seated on a non-inflammatory base, but in some cases, when the nodules were close together, a slight reddening and thickening of the interlying skin was present.

"The lesions consisted of:

"1. Very small nodules, barely palpable, lying at various depths in the cutis. These felt to the touch like fine shot, were freely movable on the underlying structure, and the skin over them was not discolored. These early lesions could not be seen at all if viewed by direct light, but when the patient was observed from the side a slight elevation could often be seen over them.

"2. Flat, slightly raised papules, varying from 1 to 2 mm. in diameter. These were of a light yellowish-brown color, and in some cases were covered with a tightly adherent scale. When pressed upon with a glass slide, there became apparent a central whitish, opaque area, surrounded by a brownish-yellow collar of 'apple-jelly' tissue, which was sharply defined from the sur-

rounding normal skin. When the scale was removed, a small opening in the center of the yellowish infiltrate was disclosed, and underneath the scale one could frequently see a cheese-like plug, which had occupied the opening. This yellowish infiltrate, consisting of a gelatinous, very friable mass, could be entirely removed with a fine curette, leaving a sharply punched-out opening. This type of lesion was best observed on the forehead. On the chin and sides of the nose, the nodules of this size were more elevated and cone-like in structure, and were not usually covered with a scale. Here, under pressure with a glass slide, was seen a small translucent center, resembling a deep vesicle, surrounded by the jelly-like collar. Some of these nodules were pierced by a hair, in which case they resembled the ordinary pustular nodules of acne.

"3. Large elevated tubercles, round or oval in shape, varying from .5 to 1 cm. in diameter. These nodules were firm and elastic to the touch or soft and fluctuating. The skin over them, depending on the depth of the lesion, showed either a slight reddening, or was of a dark-red color, frequently showing a central pustulation. The softer ones contained a creamy-like, often blood-streaked material, and from the firm ones could be removed the above mentioned brownish-yellow, gelatinous tissue, which was similar in every respect to the 'apple-jelly' nodules of lupus tissue.

"The blood-count showed the normal cell relation. The Calmette reaction was negative, but the skin tuberculin test was positive.

"The Wassermann reaction was negative in both the blood and spinal fluid. The cell-count, the globulin, and the gold-chloride tests for the spinal fluid were negative.

"*Histologic examination:* Seven nodules of various sizes were excised, fixed in formalin, and stained by the usual methods. Of this number, three represented the small shot-like nodules, which were just palpable in the skin. These gave the most definite and uncomplicated picture, and, being the earliest lesions which could be demonstrated clinically, were studied in detail. They

averaged about 1 mm. in diameter, lay in the lower half of the cutis, and were sharply defined from the surrounding tissue. Their pathologic structure was rather sharply separated into three parts: (1) A central finely granular, homogeneous mass, containing towards its periphery a few picnotic nuclei and nuclear fragments. (2) Surrounding this a ring of cellular tissue, composed of round, oval, or large spindle-shaped nuclei of the epithelioid type. These cells often lay in small groups or nests, showing a concentric arrangement. The intercellular substance in these nests had a coarsely granular, amorphous structure, but between them it was more of the connective-tissue type, showing fibrillar formation. In this layer giant cells were occasionally seen. (3) Lying between the above-described ring and the surrounding layer of normal compressed collagenous tissue were variable numbers of small round cells, in which were scattered a few swollen epithelioid cells. The nodule was devoid of blood-vessels except in this outside round-cell layer. Occasionally, an elastic-fiber fragment was seen in the central necrotic mass. Elastic tissue was absent from the layer of epithelioid tissue.

"In the larger nodules the pathologic process was not so sharply defined. Here hair follicles and sebaceous glands were involved in the expanding nodules. Groups and strands of epithelioid cells, in which many large giant cells were frequently present, alternated with masses of small round cells. The latter, however, were always thickest at the periphery of the infiltration. In one nodule showing clinically a central pustule, the center was filled with a mass of leukocytes and the picture of an acute inflammatory process was added. Mast cells and plasma cells were only occasionally seen.

"One of the small nodules was cut in serial sections and a number of sections from the excised piece of tissue were mounted before the nodule was reached. It was in these sections that we were fortunate enough to find three microscopic lesions which gave us the key to the point of origin of the pathologic process of acnitis. One of these lesions lay just beneath the epidermis, another midway in the cutis, and the third

in the lower border of the cutis. They were round or oblong in shape, and consisted of a small group of epithelioid cells of the same type as those described in the larger nodules. About the periphery were scattered a few small round cells, and in one section a giant cell was seen. These small infiltrations could be traced throughout their entire extent in the serial sections, and were in no way connected with the sweat-glands, hair-follicles or sebaceous glands, but lay definitely along the course of the small blood-vessels. Two or more vascular branches could be traced into each nodule, and in one of them red blood cells were seen lying free in the infiltrate. These branches before reaching the nodule, became enveloped with a mantle of small round cells, which was continuous with those surrounding the nodule.

"Our studies show definitely that the primary lesion of acnitis originates in the small blood-vessels lying at various depths in the cutis. The varied findings of other investigators can very well be explained by this assumption, as the concerned vessel may surround a hair-follicle, sweat or sebaceous gland.

"The clinical picture and the pathologic microscopic findings show clearly the method of growth and the changes taking place during the development of a nodule. The process begins in the small blood-vessels by the formation of a collection of epithelioid cells, which are most likely the result of a proliferation of the endothelium of the vessel and the surrounding connective tissue.

"The infiltration extends peripherally, attracting to its outer zone a variable number of small round cells. If it originates in the vessels associated with the hair-follicles or sweat or sebaceous glands, the picture is somewhat changed by the enclosure of these organs. Central necrosis soon takes place, owing to the absence of a blood-supply in the epithelioid infiltration.

"If the lesions lie very superficially, and especially where the skin is taut, as on the forehead, a portion of the gelatinous ring of epithelioid tissue soon comes in contact with the overlying epithelium and necrosis is hastened in both from the resulting pressure. Drying

ensues, if infection with pyogenic organisms does not take place, and the dead tissue forms the scale and necrotic plug, which is continuous with the central necrotic mass. On the cheeks and chin, where the tissues are looser, the epidermis is less frequently involved until the nodule becomes larger; then secondary infection frequently takes place, as one or more hair-follicles are usually involved by the expanding nodule.

"Etiology: The cause of acnitis is still undetermined. The resemblance of the lesions to lupus tissue has led, in most of the reported cases, to careful search for positive evidence of tuberculosis, but the results have been for the most part negative. One of Finger's patients gave a positive tuberculin test, and also developed a tuberculous meningitis during treatment. The author also found, in fifty histologic preparations, two bacilli resembling tubercle bacilli.

"Besnier obtained a positive inoculation test, but Jesionek doubts his results, as the animal did not die until three months after the inoculation.

"Jadassohn's case gave a positive tuberculin test, and inoculation of animals was successful. The patient also had a tuberculous proctitis.

"Our bacteriologic results were entirely unfruitful. Three guinea-pigs were injected intraperitoneally with the excised and curetted contents of nodules. Two died within two weeks. One was destroyed by the janitor before an autopsy could be performed. The other showed only a few enlarged mesenteric lymph-glands. Stained sections of one of these glands showed no evidence of tuberculosis, nor were any tubercle bacilli demonstrable. The third pig was sacrificed after three weeks' time; no pathologic changes were found.

"Examination of a number of stained sections and smears of the gelatinous contents of the nodules showed no tubercle bacilli; a few cocci were occasionally seen.

"Cultures were made from the uninfected nodular contents on the various laboratory media, including Noguchi's *Spirochaeta media*, with entirely negative results. Cultures from the pustular lesions gave *Staphylococcus albus*.

"The entire gelatinous content of one of the nodules, as well as some of the nodular tissue, ground up in saline solution, was introduced into the skin of the forearm of the patient. Absorption took place completely without any definite inflammatory reaction.

"Although our results in obtaining positive bacteriologic evidence of tuberculosis in the individual lesions were unfruitful, other evidence, namely, the tuberculous character of the nodules, and the fact that the patient gave a positive tuberculin test, as well as showing signs of an old tuberculosis of the lungs, is very suggestive that the disease is a form of tuberculosis. Many investigators, however—Schamberg, Crocker, Barthélmey, and others—are not in favor of this assumption.

"*Course and treatment:* In our patient the condition seemed to have reached its height at the time of his first visit to us. Several small nodules were marked, but no definite increase in size was noted. The patient was observed four weeks without treatment. He was then given an erythema *x-ray* dose on one side of the face and sulphur ointment on the other. The side treated with *x-rays* showed, in two weeks, a definite decrease in the size of the nodules. The portion of the face previously treated with sulphur ointment was now *x-rayed*, and after the slight erythema had subsided he was given the sulphur ointment for the entire face. After an absence of about two months, when he returned to the dispensary, a very decided improvement was noticed. About two-thirds of the lesions had entirely disappeared, leaving, in some cases, especially on the hairy portion of the face, small, irregular, rather deep scars. On the temples and forehead the scars were more shallow, velvety, and slightly pigmented.

"At the present time, ten months since the patient was first seen, the disease has in general subsided, but a few small freshly developed lesions are to be seen on the cheeks and eyelids."

BULLOUS DERMATOSES.

Bullous Dermatitis. The group of bullous dermatoses, on account of their serious nature, has been of

great interest to workers in skin diseases. The etiology of the major portion of these cases is not known. One single group described by Pernet and Bullock, and now commonly recognized as acute septic pemphigus, appears to be due to some infection. As to other cases, various theories are considered to account for their etiology.

An interesting case throwing light on the etiology of a bullous dermatitis is recorded by Potter.⁵ The patient was a woman 22 years of age, and previous to the present illness had presented nothing of interest in a medical way. One month previous to the onset of the illness, she gave birth to a normal child. The pregnancy, labor, and puerperium were normal. Two weeks after the confinement, the patient was up and feeling perfectly well. Four weeks after the confinement, she had a convulsive seizure and was unconscious for an hour. Several such attacks occurred during the following week. Ten days after the first attack, a scarlatiniform eruption appeared on the forearms and face, with slight swelling and tenderness. The erythema disappeared in three or four days from the forearms, but persisted on the face over the right temporal region. A bullous eruption next appeared on the forearms and gradually spread to the face, shoulders, buttocks, and lower limbs. The bullae were from one-half to three-fourths of an inch in diameter and rose from a normal skin. They were not surrounded by an inflammatory halo. New bullae appeared throughout the course of the disease, which lasted for six weeks. The disease ran a course similar in some respects to typhoid fever, with an irregular septic temperature, reaching 103° F.

Blood cultures and all other findings were negative, except cultures from the bullae, which showed a bacillus of the colon type. Repeated urinary examinations were negative, as was also an examination for some focus of infection. The throat, including the tonsils and the teeth, was normal.

A vaccine was prepared from the bacillus and in all eight injections were given. The first was administered one week after the appearance of the bullae, and the

(5) Jour. Cut. Dis., April, 1915.

initial dose was 50 million organisms. The injections were given every fourth day for five administrations, the dose being increased 50 million at each injection until it reached 250 million organisms. Subsequent to this, the injections were given weekly at the last-mentioned dosage. A distinct reaction occurred after each injection, and it was the opinion of the reporter that the development of bullae was checked and the inflammatory condition of the face benefited by this treatment.

The remainder of the treatment consisted in placing the patient on a liquid diet and employing eliminative and supportive measures, which included high colonic irrigations, and salol, strychnine, strophanthus, and whiskey internally.

It is Potter's opinion that the eruption belonged to the bullous type of the erythema multiforme group, although the bullae were of a true pemphigoid nature. The history of this case, together with the favorable termination, and the finding of a colon bacillus, from which a vaccine was prepared and administered, was of extreme scientific interest.

Epidermolysis Bullosa Acquisita. This disease is recognized as an hereditary disorder, usually beginning shortly after birth. It is characterized by vesicular and bullous lesions, occurring on the hands, feet, elbows, and knees, and is induced by trauma occurring in peculiarly sensitive skins. A recent work by Engman and Mook shows that there is a deficient production of elastin in such skins. There are certain cases that begin later in life, which present a similar group of symptoms. These have been termed traumatic pemphigus, in order to avoid confusion. Recently, however, an acquired form is beginning to be recognized. Wise⁶ reports such a case and reviews the literature. His patient was a man aged 40, a native of Austria and a resident of the United States for fifteen years, and by occupation a merchant. The duration of the disorder at the time of the report was fourteen months.

The eruption occurred on the hands, wrists, elbows, knees, feet, and ankles, as well as on the buccal mucosa.

(6) Jour. Cut. Dis., June, 1915.

The lesions were vesicles and various sizes of bullae. In addition, there was some cutaneous atrophy. Scattered throughout the areas were aggregations of milium-like bodies or cysts. Most of these occurred over the metacarpo-phalangeal articulations. On the buccal surface of the cheeks and the mucosa of the hard palate, there were lentil-sized, flattened vesicles, also small erosions on the gums (see Plate III).

The author concludes as follows:

"We are justified in recognizing the existence of an acquired form of epidermolysis bullosa, distinguishing it from the better known congenital and hereditary forms of the disease.

"Excepting that the malady first appears in adult life, the acquired form is practically identical, in its clinical manifestations, course, and evolution, with the congenital and hereditary forms of the affection.

"The histopathologic features vary greatly in different cases, especially with regard to the elastic tissue of the skin and the changes in the vascular system."

ECZEMA.

Eczema. The question as to whether eczema is of external or internal origin is one that has been discussed for many years. A particular type of the disorder is described by Tweddell⁷ in his own person, which has been of twenty years' duration. The disorder was limited largely to the feet, and it was usually much worse during the warm months of the year. It is described as beginning with itching and sweating between the toes, sometimes followed in a day or two by the appearance of vesicles. In this case, the vesicles when opened discharged for a short time, then closed up again as though they had never been touched. Vesicles also occurred between the fingers. During the winter months, the vesicles were replaced by fissures, the latter being painful rather than pruritic. At the time of the report, the vesicles had spread to the palms and the

(7) Med. Record, Sept. 11, 1915.

dorsal surface of the hands, forming crusts and fissures, with a serous discharge.

At this time the patient, by professional advice, put himself on a rice diet. After two months' treatment, which was only irregularly carried out, recovery is reported.

The writer concludes that his eczema was due to a diet which was too rich in protein, and that if a rigid rice diet, followed by a purely vegetable diet, had been carried out, a rapid recovery would have ensued. He further concludes that all examples of this sort are due to a diet rich in protein, or to stimulants.

[In view of the writer's description of his case, a microscopic examination of the lesions in his next attack for *Epidermophyton inguinale* might prove of interest.—Ed.]

ERYTHEMA.

Erythema Nodosum. Much important work has been done recently in regard to the etiology of this disorder. The infectious nature of the major portion of acute cases has been settled by Rosenow. That there are cases that have several etiological factors, there appears to be no question.

The association of erythema nodosum and tuberculosis is discussed by O. H. Foerster,⁸ who reports two personal cases and reviews the literature of a large number of others, and from his study concludes that it is reasonable to regard a close association as existing between erythema nodosum and tuberculosis.

Erythema Perstans Faciei Producing Atrophy. Kreibich⁹ reports an interesting case of this unusual condition. The patient was a young woman, 21 years old, of the working class. Six years previously she had had enlarged cervical glands, probably tuberculous, which had been removed surgically, without subsequent recurrence. During the first ten months, she had suffered repeated attacks of fever, lasting usually about one week.

(8) Jour. Amer. Med. Ass'n., Oct. 10, 1914.

(9) Arch. Derm. Syph., May, 1915.

Simultaneously, there appeared on the face a marked inflammatory swelling, which subsided with the fever. There remained, however, numerous small, red macules, which eventually led to atrophy. One month after the onset of the fever, there was a sudden and marked alopecia.

The atrophy and pigmentation gave an appearance remotely resembling xeroderma pigmentosum. The atrophic areas were small, in places scaling, macules distributed over the entire face, but especially numerous on the cheeks and in the temporal regions, where there was marked alopecia. In the latter regions and in the scalp the atrophy was deeper than elsewhere. The skin of the cheek was thickened, and that of the lower eyelids was edematous. The vermilion borders of the lips were invaded by the atrophic spots. Scattered among the atrophic scars were reddened areas, which had not yet progressed to atrophy. There was also marked atrophic rhinitis.

The patient reacted with high fever to injections of old tuberculin. The reddened areas became intensified in color, but this was probably to be accounted for by the fever, inasmuch as the lesions resumed their former hue the following day. Excision of tissue for histologic examination caused a marked swelling and erythema.

The histologic picture was that of a scarring atrophy following a non-specific inflammatory reaction, with no indication of tuberculosis.

The patient was seen a year later, and during that time no exacerbation had occurred.

Endemic Erythema Multiforme. Polland¹ saw an old man with extensive and typical lesions of erythema multiforme, during the course of which he developed pneumonia and died. About the same time, "scarcely a day passed without a case of herpes zoster presenting itself." He also saw a few cases of purpura rheumatica. The author believes that the three diseases are manifestations of erythema exudativum multiforme, and that this is a clinical entity, with a characteristic symptom-

(1) Derm. Zeitschr., January, 1915.

complex, indicating an infectious origin, probably through the blood-stream.

[Rosenow (Practical Medicine Series, Vol. IX, 1914, page 24) has already demonstrated experimentally the etiology of erythema nodosum, and recently has shown that herpes zoster (*vid. infra*) can likewise be produced experimentally. One case of erythema multiforme, an unmentioned number of cases of herpes zoster, and a case or two of purpura rheumatica seem to be scarcely enough material upon which to base any sweeping conclusions.—ED.]

DERMATOSIS OF AURICLE.

Chondrodermatitis Nodularis Chronica Helicis.

During the past 10 years, Winkler,² of Lucerne, has observed a series of eight cases of a hitherto undescribed disease of the auricle. The patients were all men between the ages of 28 and 65 years. Of these, two had consulted the author concerning the condition, and six for other disorders. Three were studied histologically. In two cases the disease was bilateral, but the remaining six cases were equally divided between right and left. The patients were found in all walks of life. None had suffered from pernio. Only one patient thought the lesion worse in winter.

The essential lesion was a cherry stone-sized, flat papule, with a central crust, situated on the upper pole of the auricle. The margin was slightly elevated and somewhat hard. The color was either that of the surrounding skin, or translucent, as that of an epithelioma. The crust was sometimes easily removed, but again was found firmly adherent. Removal of the crust was usually attended with sharp pain and left a well-defined ulcer, irregularly contoured, with a red floor and, in places, undermined walls.

Occasionally, the nodule becomes infected, swollen, and pustular, and quite painful. This process may proceed to heal spontaneously, only to recur at a later date.

(2) Arch. Derm. Syph., April, 1915.

Microscopically, there was found a proliferation of the epithelium, lengthening of the interpapillary bodies, and evidence of hyperkeratosis and parakeratosis. In one case there was a thickening of the epidermis, with loss of the papillae. In the cutis there was marked infiltration, which localized into an abscess beneath the epithelium. At the periphery of the infiltrate, the round cell predominated. The vessels were dilated and their walls infiltrated. The cartilage showed signs of degeneration.

The pathogenesis is not clear. Many ears show slight thinning, thickening, or nodulation of the cartilage. Such alteration in the cartilage, under the influence of traumatism of various kinds, might be followed by secondary infection and chronic inflammation.

The lesions are differentiated clinically from epithelioma by a lesser degree of induration, and of translucency of the margins. In doubtful cases, the histology would make a decision easy to reach. Winkler admits the similarity of the lesions to pernio, but insists that the patients were without any other evidence of pernio, and that some of them suffered as much in summer as in the winter.

Excision was the only method of treatment giving satisfactory results.

DRUG AND VACCINE ERUPTIONS.

Bromide Eruptions. King Smith^a reports two of the rarer types of eruptions which may be produced by the internal administration of bromides.

The first case was that of a man aged 28, who had suffered from epilepsy and had taken a proprietary cure for the disease, and later bromides, which had been prescribed by a physician. The nature of the lesions induced was at first not suspected. In this case, the legs below the knees were involved. The lesion on the right leg consisted of a patch about six inches long, extending half-way around the leg, with a somewhat serpiginous outline. The outer border was elevated and

(3) Canadian Pract. and Rev., April, 1915.

covered with dark crusts, the removal of which displayed a granular bleeding surface, which presented numerous minute abscesses. The patch was surrounded by an inflammatory areola. The center of the patch was of a peculiar slate-color, presenting here and there well-marked fissures. Throughout the patch there was slight evidence of scar-formation. The left leg had two lesions, similar to but not so extensive as the one on the right. On discontinuing the use of the bromides, the case cleared up in two months.

The second case was that of a boy aged 14, who also had taken a proprietary cure for fits. The disorder began as a pustule on the left leg and was soon followed by others. Shortly afterward, the lesion resembled a carbuncle. When examined, the left leg presented a patch extending from the ankle to the middle of the calf, completely encircling the leg. The patch consisted of exuberant granulations, covered by black crusts. The outer border was congested and presented numerous pustules, some of which were furuncular, and there was a diffuse purulent exudate. The area surrounding the patch was acutely inflamed, showing many pustules and numerous small abscess cavities. On discontinuing the bromide and giving liquor arsenicalis and applying mild antiseptic dressings, the lesions cleared up in two months.

[These cases are of interest in view of the fact that bromide eruptions sometimes very closely simulate syphilis, tuberculosis verrucosa cutis, and blastomycosis. A group of cases of the latter type has been recorded by the editor in which the clinical appearance was practically that of blastomycosis.—Ed.]

Scarlatiniform Exanthem Produced by Atophan. Huber-Pestalozzi⁴ reports the case of a woman of 56 who had suffered from chronic arthritis for five years. Salicylates had been used freely, and atophan had been taken for a short time at different periods. On this occasion, after the eighth dose of 0.5 gm. of atophan, a marked itching of the plantar surface of the feet commenced. Gradually this became universal, and after 24 hours a

(4) Cor-bl. f. Schweiz. Aerzte, May, 1915.

PLATE III.



Epidermolysis bullosa acquisita. Dr. Oliver S. Ormsby's patient.—Wise (see page 26).



PLATE IV.



Pemphigoid eruptions following vaccination. Showing eruption 6 days after onset.—Mook (see page 34).

scarlatiniform eruption, most accentuated over the chest, appeared. The face remained free.

Suspecting that the atophan was the cause, the drug was withdrawn and the exanthem and itching subsided.

Vaccination Eruption. A case of bullous dermatitis, which the writer, after much discussion concerning the proper classification of bullous dermatoses, classed as an acute bullous dermatitis, or septic bullous dermatitis, is recorded by Simpson.⁵

The patient was a colored man, aged 28, who developed an eruption beginning three days after vaccination. The eruption, occurring as small blisters, began on his right leg, and shortly afterward the back, face, arms, and chest became involved. On examination, on the ninth day after the onset, the patient presented a generalized bullous eruption, characterized by a sickening odor. The lesions were situated chiefly on the lateral chest walls and extensor surfaces of the legs and arms. They varied in size from 4 mm. in diameter to 4 cm. across. The bullae were preceded by erythematous spots, devoid of subjective sensations, which within twelve hours developed into bullae. After forty-eight hours, a narrow areola appeared. Coincident with this, the clear, serous contents of the lesion changed to a purulent or sero-purulent fluid. Through the evolution of the lesions, concentric rings and gyrate figures were produced.

The constitutional symptoms were exhibited as elevation of temperature (100 degrees) and an increased pulse-rate. The subjective symptoms were stiffness and tenderness of the cutaneous surface.

After a very short course, the eruption underwent involution. Cultures made from the bullae developed *Staphylococcus pyogenes aureus*.

Generalized Vaccinia. A child suffering with dermatitis seborrhoeica became accidentally vaccinated on the right thigh, and as a consequence developed a generalized eruption. The case is reported by Low.⁶

The patient was three years of age and had suffered for a long period of time with a rather extensive derma-

(5) Med. Record, Nov. 28, 1914.

(6) Edinburgh Med. Jour., January, 1915.

titis seborrhoica. When brought to the infirmary for a supposed extensive recurrence, the following symptoms were presented: The face, body, and limbs were almost completely covered with an eruption of the usual appearance of seborrhoic dermatitis. The extensor aspect of the right thigh was swollen and exhibited numerous discrete pustules, some of which had a distinct central depression. The temperature on the evening of admission was 103 F. During the next twenty-four hours, the pustular eruption spread and involved the head, face, body, and limbs. In all areas the eruption was similar, and composed of small pustules, flat on the surface, and many of them showing umbilication. They all occurred as a superadded lesion on the previously existing scaling dermatitis.

Under treatment, improvement occurred, and by the seventh day the temperature was normal. On complete resolution of the lesions, pitted scars similar to those of varicella were left. The diagnosis lay between variola, varicella, and generalized vaccinia.

On inquiry, it was found that the patient's one brother, an infant of a few months old, had been vaccinated ten days before the eruption appeared on the thigh of the present patient. The infant's vaccination ran an ordinary course, and was dressed by the patient's mother, who also had charge of this case.

The conclusion arrived at is that the child, not having been previously vaccinated, received the virus in the thigh, and by scratching auto-inoculated other parts. In addition, its rapid spread is accounted for by a blood infection.

Pemphigoid Eruptions Following Vaccination. A report of six cases, with a study of others of similar type occurring in the literature, is made by Mook.⁷ The occurrence of such a large number of cases during a period of two and one-half years is unusual; and as the disease is one of serious portent, contributions throwing light on its cause or management are welcomed. The cases are well worked out and reported in detail. The author sums up as follows:

(7) Jour. Cut. Dis., October, 1915.

"Summing up the evidence from the above cases and those in the literature, we have a constitutional, more or less symmetrical, disease of the skin, following vaccination, manifested by a great variety of lesions, which may be divided into three groups:

"Group A, terminating in rapid recovery, with or without constitutional disturbance.

"Group B, continuing as a chronic, recurrent, vesicular or bullous affection, with or without constitutional symptoms.

"Group C, terminating rapidly in death.

"The vaccination may or may not have been successful.

"The period of incubation may vary from three or four days to four months. A majority of the cases vary from three to five weeks. The benign cases are manifested by smaller bullae. Mouth lesions may or may not be present, and there may be slight or severe febrile disturbance. They may terminate in complete, uncomplicated recovery in a few weeks, or recur as a vesicular or bullous eruption, in crops, over a period of years (as in Pusey's case) as a true or pseudo dermatitis herpetiformis.

"The vegetating and scar-forming varieties are fortunately rare. All of the patients have a rise of temperature at the onset or during the course of the disease.

"The cases in this report were all primary vaccinations and presumably were in those mentioned in the references. The lesions show a predilection for certain areas, localizing around the mouth, neck, extremities, and especially the joints. The pemphigoid variety may appear as small vesicles, resembling chicken pox and smallpox, or as papulo-vesicles, and may become pustular. The bullae are usually clear and tense on normal skin, though they may be on inflamed and eczematoid areas; of great variety in sizes, forms and configurations in the same individual. Hemorrhagic bullae are frequent. Circinate and concentric rings of bullae are marked features. In some cases the central bulla is hemorrhagic, with concentric serous vesicles and bullae, and not necessarily intercommunicating. Others have a tendency to

the production of large gyrate patches of peculiar inflammatory areas, resembling mostly eczematoid dermatitis.

"The inoculation experiments were negative in two monkeys, a calf, several guinea-pigs and rabbits. Blood cultures from a fatal case and two recovered patients were negative under aerobic and anaerobic conditions, on agar and blood serum media. Numerous cultures from various bullous lesions yielded ordinary staphylococci, and some of them were sterile.

"Smears from one case showed diplococci, but the culture from this case showed staphylococci, and the guinea-pig inoculated was negative.

"A mild or marked leukocytosis occurred early in all of the cases, continuing in two of the fatal ones, and disappearing in those recovering or having a tendency to relapse. The eosinophilia appeared in the later stages, though it was not constant.

"The disease begins as a primary lesion, namely, the vaccination, followed by mild or severe constitutional involvement, with a multiformity of lesions involving the skin and mucous membrane, and running a short, acute, or chronic course, sometimes over a period of years, and in many is fatal" (see Plate IV).

HERPES ZOSTER.

The Etiology of Herpes Zoster. Rosenow and Oftedal⁸ offer a preliminary note on experimental work performed by them in herpes. The microorganisms were isolated from the tonsils, pyorrheal pockets, and spinal fluid of patients suffering with herpes. Eleven patients furnished the material, most of whom suffered with thoracic herpes zoster; three were cases of recurring herpes, one had a marked herpes of the lip and left side of the cheek during pneumonia, and one had a mild herpes during an attack of an ordinary cold.

The writers state that "herpes of the skin, tongue, or lips, and lesions in the corresponding ganglia, have been produced in a large number (46) of rabbits and other

(8) Jour. Amer. Med. Ass'n., June 12, 1915.

animals by intravenous injection of the bacteria in emulsions of extirpated tonsils, of mixed cultures and pure cultures of streptococci obtained from tonsils or pyorrheal pockets, and of streptococci in pure culture from the spinal fluid. A number of animals, usually those showing marked herpes of the skin, showed also herpetiform lesions of the viscera, and in these the ganglia of the vagus or sympathetic nerves were found to be hemorrhagic. The tendency of these organisms to localize electively in the ganglia is illustrated by the fact that herpes developed in six guinea-pigs following intraperitoneal injection."

The lesions of the ganglia are described as consisting chiefly of hemorrhages and round-cell infiltration, usually most marked just beneath and outside the capsule and surrounding areolar tissue and along the sheath of the corresponding nerve. The blood-vessels commonly show marked congestion, and at times are completely or partially filled with mononuclear or polynuclear leukocytes. Gram-staining diplococci and short chains have been found to occur quite constantly in the area, showing lesions in and about the ganglia, but not in the normal portions. Cocci have been found in these lesions, by cultures and sections, when absent in the blood and other tissues. The peripheral lesions in the experimental disease in the animals which recovered, just as in man, have not contained the organisms.

The following single experiment illustrates the group:

A small dog was injected intravenously with the growth from 45 c.c. of ascites-dextrose-tissue broth of a pure culture of a rather long-chained, green-producing streptococcus from the tonsils, removed on the second day after the onset of a typical attack of herpes zoster. The day following the injection, the animal appeared ill, and rubbed the left side of his head with his front paw. On the second day, he seemed better, but still rubbed the head gently. On the third day, the animal was chloroformed, and on examination the under surface of the skin of the left side of the forehead showed a number of hemorrhagic vesicles. A few similar lesions were found in the subcutaneous fat over the lumbar

region on the right side corresponding to the last dorsal vertebra. Under the vesicle on the left side of the head the periosteum was hemorrhagic over an area of 0.5 by 1 cm. The left gasserian ganglion showed a small hemorrhagic area. The spinal fluid was turbid and contained a moderate number of large and small mononuclear cells.

Cultures from the spinal fluid and hemorrhagic ganglion gave pure cultures of short-chained streptococci, while those from the blood and joint were sterile.

DERMATITIS HERPETIFORMIS.

Organism Found in Dermatitis Herpetiformis. Bloch⁹ grew in anaërobic culture a Gram-negative organism, which he thinks has never before been described. The same organism was found in the vesicles and in the blood of two patients. He is not yet able to say that it is the etiologic factor in the disease.

The Pemphigoid Eruptions. Under this title, MacLeod¹ delivered an address before the dermatological section of the Royal Society of Medicine, opening a discussion on this important group of diseases. After outlining the history of the term and discussing the various diseases which belong to this group which had been discussed in the past by various writers, MacLeod eliminates all except the one disorder which is known in this country as dermatitis herpetiformis.

The cardinal symptoms of this disorder, as presented by the reporter, are as follows: (1) Multiformity in the eruption; (2) herpetiform grouping; (3) intense subjective sensations; all of which features invariably occur at some period in the course of the affection, and the absence of any one of which renders the diagnosis a matter of uncertainty. The multiformity is due to a number of causes, of which the most obvious are: first, variations in the type of the initial lesion; second, the occurrence of several types of lesions synchronously;

(9) Cor-bl. f. Schweiz. Aerzte, March, 1915.

(1) Brit. Jour. Derm., June, 1915.

third, variations in the type of lesion occurring in different attacks; fourth, differences in the stages of evolution of different lesions; and, fifth, endless differences in distribution and grouping.

The initial lesions which may be encountered are prurigo-like papules, papulo-vesicles, vesicles, bullae, and erythematous or urticarial patches. The patches may be level with the surface or definitely raised, are sometimes covered with papules or vesicles grouped in a herpetiform fashion, or have a tendency to involute in the center and give rise to circinate figures, with rings of vesicles at the border, which may coalesce to form a gyrate patterning. The vesicles vary in size from that of a pinhead to a lentil, and may be acuminate or rounded, and may occur on the apices of papules, appear on healthy skin, or develop on a red base. Sooner or later, they become surrounded by an inflammatory halo, from the growth of secondary microorganisms in the contents. They may be isolated, or irregularly distributed, but as a rule are clustered in small groups, or occasionally are arranged in a circinate manner. The bullae vary in size from that of a lentil to a walnut, but are generally bean-sized. They may develop on apparently healthy skin, or on an inflamed or urticarial base, and may be regular in outline and unilocular, or irregular and multilocular. They may be dense or flabby. In rare instances, possibly through the growth of secondary organisms, vegetations may grow up toward the apices of the bullae, especially in those situated about the angles of the mouth, the anus, the vulva, or the groin. These are the cases which have been described as a mild type of pemphigus vegetans. The contents of the vesicles and bullae are at first clear and sterile, but soon become opaque and purulent from secondary infection with pyogenic microorganisms. In some cases one type of lesion predominates, while in others another is in the majority, but as a rule several phases are present simultaneously. The most common types of lesions are pustules and vesicles, which occur at some period in the course of almost every case. In MacLeod's series, bullae were present in 37 per cent.,

erythematous patches in 26 per cent., and urticarial lesions in 7 per cent.

The multiformity of the clinical picture may be increased by secondary complications resulting from rubbing or scratching and the inoculation of pyogenic micro-organisms. In this way, lichenification, white cicatrices similar to those seen in prurigo, eczematization, or pustules may result. Pigmentation occurs, varying in degree according to the intensity of the itching. Grouping of papules, vesicles, and bullae in clusters similar to those seen in herpes zoster is given as the second most constant feature. The intensity of the subjective symptoms is given as the third. These symptoms vary in type and intensity and may consist of pricking, itching, burning, or actual neuralgic pains, and are generally of a markedly paroxysmal character. Sometimes itching is so intense that the pain and discomfort of digging out the papules with the fingernails are preferable to it.

The general health, as a rule, is not affected, particularly early in the disorder, but later, on account of the marked subjective symptoms continuing over a long period, the disorder is liable to have a depressing influence on the patient both mentally and physically, causing insomnia and establishing a neurotic habit, rendering him emotional and prostrate, and in extreme cases leading to insanity. Occasionally, general symptoms occur as the result of septic absorption. The mucous membranes are occasionally implicated. Here, it may take the form of erythematous macules, vesicles leading to superficial ulcerations, or even bullae. In MacLeod's analysis, the mucosa was involved in twenty-two cases; in ten the mouth was affected, in eleven the mucous membrane of the genitals, and in one the disease began in the vulva. It has also been known to occur in the conjunctiva, and to lead to essential shrinking and blindness.

The author believes that the eosinophilia is by no means so constant as has been supposed in this disorder. In one of his cases it was only 4 per cent. in the blood at the height of an attack. Other observers, however, have recorded instances as high as 69 per cent. in the blood.

Etiology: The most common age incidence is between the twentieth and fortieth years; the extreme ages as given were from 11 weeks to 75 years. The writer believes that the major number of cases recorded in childhood should be classed as pemphigus, rather than dermatitis herpetiformis. It appears to occur about equally in males and females. Pregnancy is a definite determining cause in the cases which are recorded under the title of herpes gestationis. The disease may develop any time after the third month of pregnancy. Certain cases have appeared to result from derangements of menstruation, both exacerbations and recurrences having taken place at the menstrual periods. The writer states that, while the disease is said to occur frequently in neurotic individuals, in his experience the neuroses appeared to be the result and not the cause of the disease. He states further that there are cases on record in which an attack has been preceded or aggravated by a psychical disturbance, such as emotion, anxiety, worry, fear, anger, or severe mental work. Chills, vaccine, and drugs are also given as possible factors. Relative to the pathogenesis of the disorder, he concludes that the affection is most probably due to some autogenous toxin, not necessarily of a specific nature, which may be called forth by a variety of influences and most probably acts indirectly on the skin through the nervous system.

In MacLeod's opinion, the most difficult problem relative to diagnosis is the differentiation of dermatitis herpetiformis from chronic pemphigus. The most important points of distinction are: the uniformity of the eruption in the latter, the larger size of the bullae, their irregular distribution, the more frequent implication of the mucous membranes, and the comparative absence of subjective symptoms.

Concerning treatment, he states that at the present time the treatment can not be claimed to be more than symptomatic. Arsenic is given as the chief remedial agent; it has a controlling but not curative influence on the disease.

In the discussion which followed, which was participated in by Sir Malcolm Morris, Pernet, Sibley, Stowers,

Adamson, Whitfield, Graham Little, Pringle, Evans, Dore, Weber, and Stansfeld, there was general agreement that the symptom-complex described by the writer should be considered as an entity, and that the symptoms enumerated by MacLeod were the important features. They did not regard the presence of an increased number of eosinophiles of much importance. They considered the prognosis in the disease as guarded, in that the disorder may last for an indefinite period; and that, as a rule, the best controlling treatment for the disease is the internal administration of arsenic.

PRURIGO NODULARIS.

Prurigo Nodularis. Williams² describes two cases of this disease. The first is classed as prurigo nodularis, and the second as lichenification with tumor formation.

The first case was that of a man aged 73. In this instance the cutaneous disorder was of about five years' duration and followed an acute attack of illness attributed to the kidneys and stomach. Itching is described as being generalized. The eruption involved the greater part of the trunk and extremities. The skin was dry and harsh and presented the usual appearance described in lichenification. There were numerous large and small scratched papules, and the lines of the skin were exaggerated.

In the second case, a woman aged 25, apparently had a susceptible skin that reacted readily to outside irritants. The duration of the cutaneous disorder in this case was about four years. It began as a papule, which was situated on the left forearm. Subsequent to this, a boil developed at the site of the original papule, which was followed by a series of similar lesions on both forearms, over a period of some months. During this time, when going into a warm room from the cold air outside, similarly formed nodules would appear on the hands and ankles. These lesions produced marked burning and itching sensations. There was little discoloration of the skin in the area. New nodules appeared from

(2) Amer. Jour. Med. Sci., September, 1915.

time to time. According to the patient's statement, the removal by scratching of the thickened, horny layer, together with the horny plaque or kernel which was attached to it, relieved the itching and the papule flattened but did not disappear, but grew again on renewed irritation. Irritation of an old flattened lesion often produced a blister containing bloody serum. Scratching of the normal skin was not followed by the development of papules, and the itching appeared to be limited to the lesions and was very severe.

On examination two years after the beginning, nodules were noted scattered over both the upper and lower extremities. The earlier lesions were small nodules in or under the skin, covered by unchanged epithelium. In the older lesions the epithelium was thickened, pink or light brownish in color, and slightly rough and warty. The lesions varied in size from those scarcely perceptible to tumors three-eighths of an inch in diameter on the hands and seven-sixteenths of an inch in diameter on the legs. Many of the larger lesions were encrusted.

A microscopic examination of the nodules presented features similar to those described by other observers of the disorder.

In summing up the cases, Williams states, concerning the one he considers prurigo nodularis that the tumors arose from apparently normal skin, and that in the areas where the disorder had been present for only a moderate length of time there was no thickening or lichenification, and that the lesions when once established never disappeared; a statement made by the patient and verified by his own observation.

SKIN CHANGES IN LEUKEMIA.

Skin Changes in a Case of Lymphatic Leukemia. A woman, 55 years old, who had been under treatment in the medical wards for 12 weeks, was transferred to Kreibich^s because of the development of an itching dermatitis.

The leukocytes rose from 23,000 to 44,200 while under observation. She had been given frequent treatments

(3) Arch. Derm. Syph., May, 1915.

with the Roentgen rays, but there was no evidence of any skin reaction that could account for the dermatosis. When first seen, the patient had wide-spread, intensely pruritic, urticaria vesiculosa. The face, neck, and extremities were covered with colliquative, itching vesicles, situated on an urticarial wheal. The lesions were identical with those of strophulus infantum. After a time, the type changed to that of an edematous wheal, red when formed, but becoming anemic in the center, like urticaria alba. These lesions persisted for several hours, then underwent involution. Some of the wheals later showed cyanotic flecks (paresis of the vessels), while others developed extravasates and passed through the usual color changes produced by contusions. In the center of many of these urticarial lesions a tense, hard vesicle formed, which, on puncture, gave a small amount of yellowish exudate. Excoriation and infection resulted in the formation of yellow crusts. Inasmuch as the wheals were transitory, these excoriated vesicles were later left surrounded by normal skin.

About two months after admission, the patient developed symmetrical, confluent, erythematous areas on the nose and cheeks. The outlines were irregular, and the centers pale, giving a suggestion of atrophy, which, however did not occur.

Autoserum therapy was without effect. The skin lesions completely disappeared after three months.

A similar case reported by Shattuck is mentioned in Mracek's Handbuch by Paltauf.

The author thinks that the urticaria might have been due to abnormal substances circulating in the bloodstream, the existence of which was indicated by the inhibited coagulation and the increased lipid content. The substances may have been elaborated in the pathologic glands after exposure to the Roentgen rays; or there may have been leukemic infiltration of the central nervous system inasmuch as the difference between these lesions and those of herpes zoster is merely one of degree. Fischl has reported a case of generalized zoster occurring in lymphatic leukemia, and at autopsy the Gasserian ganglia were found infiltrated (see Plate V).

LICHEN PLANUS.

Lichen Planus. Although lichen planus is among the rarer disorders, it is seen sufficiently often to be pretty generally recognized. The hypertrophic form of the disorder occurs less commonly, though also sufficiently often to make it perfectly familiar to those who are seeing skin diseases. Two unusual cases of this form of the disease are recorded by R. Sutton.⁵

The first case was that of a man of 27, in whom the disorder had been present for about one year. It began as an itching papular eruption on the outer surface of the left thigh. There were two patches: one about 9 cm. and the other about 18 cm. in diameter. They consisted of closely aggregated groups of large, flat or oval-topped, scaly papules, angular in outline, and hard and resistant to the touch. There were a few satellite lesions in the neighborhood of the larger plaques. Many of the nodules were connected not only with each other, but also to the outlying satellite lesions, by bridge-like bands of diseased tissue. The skin included between these bands was normal. The impression given, according to Sutton, was that of a heavy piece of knotted embroidery drawn tightly over the skin. The histology is described as being typical of lichen planus hypertrophicus.

The second patient was a man aged 63 years, in whom the lesions were confined to the wrists and backs of the hands, and had been present for three months when examined. The lesions began as small, dry, red, intensely itching papules, which gradually increased in size. In the area above noted, there were numerous typical lichen planus papules and a few large, flat-topped, scaling nodules and plaques. Many were connected with neighboring lesions at one or more points, either by bands of thickened, reddened skin, or elevated, horny ridges, producing a mosaic-like appearance. The histologic picture here was also practically that of lichen planus hypertrophicus.

(5) Jour. Amer. Med. Ass'n., March 27, 1915.

NEURODERMATITIS NODULOSA.

Two Cases of Neurodermatitis Nodulosa. Fabry⁶ reports two cases, which were carefully studied histologically. One of them was reported by the author in 1895 as *urticaria chronica perstans papulosa*, but since that time he has changed his mind concerning the diagnosis, albeit there has been no appreciable change in the lesions during the twenty-five years the patient has been under his observation.

The first patient was a woman, 60 years of age, who had suffered from the disorder for twenty-eight years. The essential lesion was a red, scaling nodule, which later became grayish-brown. Friction produced no change. The skin of the face had the typical grayish color and *defluvium supercilii* described by Brocq. The skin of the entire body was grayish, leathery, and lichenified. The itching was intense, and the condition of the patient pitiable.

The other patient was a woman 47 years of age who had developed similar lesions two years previously on the feet. Later the lesions appeared on the face and arms. The face was gray, dry, and showed the characteristic *defluvium supercilii*. *Urticaria factitia* and swelling of the nodules after friction were absent.

Histologically the cases were similar. There was marked infiltration of round cells about the vessels and nerves, and a lessening of the epithelial layer. There was no giant cell nor mast-cell to be found.

Fabry differentiates neurodermatitis into three groups: (a) *neurodermatitis diffusa*; (b) *neurodermatitis circumscripta* (*lichen chronicus* (Vidal)); and (c) *neurodermatitis nodularis*. Between these three there are probably transitions.

PSORIASIS.

Psoriasis. Since the treatment of psoriasis by autogenous serum was reviewed in the *Practical Medicine Year Book*, in 1914, a number of observers have reported

(6) *Arch. Derm. Syph.*, April, 1915.

their results, and the consensus of opinion seems to be that the results of treatment by this method are disappointing.

Howard Fox,⁷ in a late contribution, concludes:

"Injections of autogenous serum alone have no effect whatever upon lesions of psoriasis. When given as an adjuvant to chrysarobin, better results seem to have been attained in certain cases than when chrysarobin alone has been used."

Trimble and Rothwell⁸ made a study of 50 cases of psoriasis to demonstrate the value of the method. Thirty patients were given autoserum treatment, while 20 were used as controls. Their conclusions follow:

"1. Autogenous serum injections alone for the cure of psoriasis seem to us worthless.

"2. Autogenous serum as an adjuvant to weak chrysarobin ointment seems also to us worthless, since a patient not taking the serum will recover quite as quickly with the same ointment.

"3. Chrysarobin ointment in 2 per cent. strength will cause a dermatitis as quickly in patients taking the injections as it will in those not taking them.

"4. In typical, uncomplicated cases of psoriasis, the patches are not influenced until the external application is begun.

"5. The method is harmless, if done under proper antiseptic precautions.

"6. Our last conclusion is that many psoriatic patients, who have suffered for years from either persistent or recurring attacks of the disease, become tired and lax in their attention to treatment. The new method serves to stimulate these patients to such an extent that they pay more attention to their personal hygiene, rub in the ointment more vigorously, in fact, give themselves up to the treatment; all of which in turn seems to produce a quicker and better result."

Willock,⁹ in a study of ten cases of psoriasis, concludes as follows:

(7) Jour. Cut. Dis., 1915, vol. 33, p. 616.

(8) Jour. Cut. Dis., 1915, vol. 33, p. 621.

(9) Jour. Amer. Med. Ass'n., July 8, 1915.

"As a result of treating carefully and observing the effects closely in ten typical cases of psoriasis, we have come to the conclusion that autoserum therapy is of no significant value in the treatment of this condition. Neither have we been able to confirm the claims, so enthusiastically made by other authors, relative to the increased efficiency of weak chrysophanic acid ointments when used after the patient has already received a series of autoserum injections. Other patients, treated by us with 1 or 2 per cent. chrysophanic acid alone, did just as well as those receiving the combined autoserum and chrysophanic acid, and thereby saved the time necessary in giving the autoserum injections."

Ravitch¹ says:

"Having been an enthusiastic follower of autoserum therapy in skin diseases, and having given it a thorough and impartial trial, I regret to acknowledge my belief that autoserum therapy will prove another 'therapeutic fiasco.'

"According to my experience, this new method of autogenous serum therapy should be accorded a place in therapeutics, but as to its universal adoption in the treatment of chronic dermatoses, psoriasis in particular, I find its usefulness limited to a very few selected cases only, for the following reasons:

"1. Intravenous injection is rather a dangerous procedure, particularly more so when from six to ten injections must be administered.

"2. Only in a minority of individuals, and especially seldom in women, do we find cubital veins suitable for repeated venous punctures and injections.

"3. In repeated veno-punctures, we must beware of endophlebitis.

"4. The technique is not simple or absolutely void of infection, no matter how cautious we may be, and the fact that I had no infection in my many cases I attribute as much to good luck as to my extreme care to maintain asepsis.

"5. The length of procedure, the risk, the uncer-

(1) Jour. Amer. Med. Ass'n., April 10, 1915.

PLATE V.



Herpes zoster in Hodgkin's disease. Dr. Oliver S. Ormsby's patient.—Kreibich (see page 43).

PLATE VI.



Purpura annularis telangiectodes.—MacKee (see page 53).

tainty of good results, and the expense of treatment make it rather prohibitive in the majority of cases.

"6. We are in total ignorance of its action, and of the dangers that may accompany such action.

"The conclusions which I have drawn may be summed up as follows:

"7. Investigators fail to state the real percentage of cures.

"8. In the statistics which I have gathered of over 5,000 injections, a comparatively small percentage of cures were reported, and the percentage shrinks as further reports come in, and cases are transferred from the 'permanently cured' to the 'temporarily relieved.'

"It gave striking results in a very obstinate case of psoriasis of thirty-two years' duration. How long the patient will be free from the eruption, time only can tell. The patient is still using a very mild chrysarobin ointment. Sixty per cent. of this class did not respond at all to autoserum, while the rest of the subjects were benefited only temporarily.

"I had as good temporary results from lecithinized serum, plain artificial serum, and injections of cacodylate of soda and mercury.

"In psoriasis none of the serums made any impression on the disease without the use of chrysarobin.

"A judicious and careful use of chrysarobin externally, with the employment of a suitable drug internally, is as efficient as the autoserum therapy.

"It is rather a peculiar fact in my experience with autoserum in psoriasis that my first cases seemingly improved more rapidly than the subsequent ones. Whether this was due to the waning of my enthusiasm, and the resultant lessened confidence on the part of the patient, diminishing the psychic factor, I do not know, but my method has been the same throughout the work, while the results have become more unfavorable."

[In spite of the reaction that has appeared against the value of this treatment since the earlier accounts of brilliant results, the fact remains that a large number of psoriatic patients have received more benefit from the combined use of autoserum and a 2 per cent. chry-

sarobin ointment than from other methods previously employed; so the treatment may still be considered an addition to our therapeutic methods in the management of psoriasis.—Ed.]

SMOKER'S PATCHES.

Smoker's Patches. Some years ago, Landouzy² called attention to the linear patches of leucoplasia found inside the cheeks parallel with the line of approximation of the molars as an indication of the existence of syphilis. Since then he has continued his observations, and is now convinced that smoking plays only a minor rôle in the development of these keratoses, and that syphilis is the cause *sine qua non*. He has seen many non-smoking women affected, but none lacking either a syphilitic husband or else personal manifestation of the disease. Furthermore, careful examination will frequently disclose a concomitant leucoplasia of the genital mucous membrane.

Of 164 patients with tertiary manifestations seen in Laënnec Hospital, 127 men and 4 women had the patches. Of these, 79 men and 2 women gave positive Wassermann reactions.

In private practice, he found the patches in 52 men of a group of 72 tertiary syphilitics, and in 4 of 12 women. Of these there were 39 men and 2 women giving positive Wassermann reactions.

Of 17 patients seen recently in the military hospital of Val-du-Grâce, 15 presented a symmetrical leucoplasia, and of these 9 reacted positively.

TELANGIECTASIA.

Generalized Telangiectasia. An important contribution has been made on this obscure disorder by Stokes.³ As only a brief abstract can be given here, those who are interested should consult the original article.

The patient, a widow, 34 years of age, when coming

(2) *Presse méd.*, May, 1915.

(3) *Amer. Jour. Med. Sci.*, May, 1915.

under observation, complained of spreading redness on the arms, legs, and body, of five years' duration. In the personal history, nose-bleed is recorded as having started at the age of 9 years. The attacks averaged one a week, and showed a certain periodicity. The hemorrhage was severe. This recurrent epistaxis ceased at the age of 12 years, at the coming on of menstruation. The patient was married at the age of 21, and has two living, healthy children; no miscarriages. Her husband died at the age of 32, the probable diagnosis being tabetic gastric crises.

The cutaneous disorder began five years previously on the dorsal surfaces of both feet, as two or three small pink spots, which became confluent, and from which a diffuse redness spread up the leg. At about the same time, the wrist became involved, the condition spreading upward on the arms, the trunk being the last area invaded. The palms, soles, and face were free.

While the telangiectases were spreading, the patient gained fifteen pounds in weight.

There is moderate itching of the skin, but no scaling. The redness becomes more marked when the parts are dependent. In the morning, the affected skin is almost white. The telangiectasia is practically generalized, but with marked variations in the intensity of involvement. On a close examination, different types of lesions are presented: First, a diffuse or mottled, dark-red to purplish flush over extensive areas; second, a telangiectasia approaching the type of naevus araneus; third, a macule, usually seen on comparatively free areas; the fourth type consists of pin-point, purplish or reddish, angiomatous puncta. There were no suggestions of annular or gyrate configurations, of white spots, of central involution, of induration, of nodule formation, of edema, purpuric hemorrhage, atrophy, or follicular changes associated with telangiectasia.

Summary: The salient points of the case are summarized as follows:

1. A history devoid of congenital or hereditary elements bearing on present trouble.
2. Prior to marriage, nothing of interest except

epistaxis in childhood, ending with the establishment of menstruation.

3. Syphilis of the nervous system in the patient's husband (gastric crises).

4. The appearance in the wife, eight years after marriage, of seemingly idiopathic telangiectatic lesions in the skin, generalizing slowly through a period of five years. Lesions macular, punctate, and diffuse, the two latter symmetrical, the former asymmetrical, in distribution. No other distinctive configuration, no symptoms, no notable secondary changes in the skin, such as hemorrhage, pigmentation or atrophy. No involvement of mucous membranes.

5. The absence on examination of any demonstrable abnormality in the blood.

6. The absence on examination of any abnormality in the renal excretory mechanism.

7. The absence of any directly toxic influence known to have a degenerative effect on the cardiovascular system, such as alcohol, jaundice, lead.

8. The absence of evidence of vasomotor asthenia, of involvement of the nervous system other than that associated with tabes dorsalis, or of involvement of the sympathetic system. Nothing to connect the distribution of the vascular phenomena with that of peripheral nerves.

9. The absence of any demonstrable abnormality of internal secretion—hyperthyroidism or hypothyroidism, pituitarism, ovarian, or adrenal changes.

10. The presence of active syphilis in the patient in the form of involvement of central nervous system; active neuro-retinitis; eighth-nerve involvement; incomplete tabes dorsalis; positive, later negative, Wassermann reaction of the blood.

11. Pathologic changes in the cardio-vascular system in the form of (a) hypertrophy of the heart, and possibly a patch of calcification at the base of the aorta (electrocardiographic and fluoroscopic examinations); and (b) in the retina, demonstrable peripheral arteriosclerosis far in advance of the patient's years.

12. Experimental data (plethysmograph) tending to

show a constriction of the peripheral arterioles in one of the most affected portions of the body (arm), without involvement of the deeper vessels.

13. Further evidence for a lack of extensive involvement of the deeper vascular trunks in the form of a normal blood-pressure.

14. Final microscopic demonstration in macular and diffuse types of skin lesions of extensive endarteritis obliterans, and of periarteritis in the vascular supply of the skin, of the type often associated with syphilis. Accompanying this is a low-grade, perivascular, round-cell infiltration, new formation of vessels in the affected skin, and some ectasia (compensatory?) of vessels as yet uninvolved.

Conclusions: 1. Cardiovascular degenerative conditions, among which syphilis is most conspicuous, appear to stand in etiologic relation to a considerable percentage of the obscure dermatoses heretofore grouped under the meaningless terms, "essential," "idiopathic," and "primary" telangiectasia.

2. The conception of a low-grade inflammation due to definite etiologic factors, such as syphilis, lead, alcohol, hyperthyroidism, etc., forms a more substantial starting point for further study than relatively intangible angioneurotic theories of the etiology of generalized telangiectases.

3. Much of the existing confusion in the classification of telangiectatic cutaneous lesions can be ascribed to over-reliance on purely clinical data, whose value as exclusive criteria in these cases is open to grave doubt.

4. While not all acquired cutaneous telangiectases will be aligned under the scheme just mentioned, there is reason to believe that more searching analysis of etiology and pathology will readjust classification in this field. Such study may even lead to the inclusion of clinical cases of angioma serpiginosum or Majocchi's disease under a new group of peripheral vascular scleroses with telangiectasia of known etiology.

Purpura Annularis Telangiectodes. While this rare and interesting disorder has been recognized in Europe for some years, no cases have occurred in America until

recently. The first was recorded by MacKee,⁴ who, in addition to recording his case, gives a complete exposition of the subject, consisting of an historical sketch, composite picture, photographs, case reports, a discussion of the clinical and histologic features of the disease, with clinical and histologic charts, and a consideration of the etiology and pathogenesis and, finally, a complete review of the literature. The composite clinical picture is given by MacKee as follows:

The disorder is divided into three stages: first, teleangiectatic; second, hemorrhagic-pigmentary; and, third, atrophic. These stages may or may not be well-defined. There is often overlapping, and in some cases the atrophic stage is absent, while in others the teleangiectatic stage may not be noted. The eruption is frequently preceded by rheumatic or neuralgic pains, especially in the knees. Mild itching may be present, but there are no marked subjective symptoms. The eruption, as a rule, appears first on the legs and dorsal surfaces of the feet, and may be limited to these regions. The thighs, and less frequently the forearms, and occasionally the arms, axillae, chest, abdomen, back, and buttocks may be involved. In one instance, lesions were noted on the soles of the feet and in the mouth.

The eruption is always bilateral and usually symmetrical. Its evolution is slow, requiring several weeks or months to attain its maximum development. Involution also progresses in the same manner, the total eruptive period ranging from several months to a year or more. The early lesions are lentil-sized, well-defined, rose or red colored macules, which are composed of a fine network of dilated capillaries. Diascopic examination is often necessary to bring out the latter facts. Under the dioscope, the lesion pales, but its color does not entirely disappear. The progress of the lesion up to this point constitutes the teleangiectatic stage. Minute puncta, consisting of hemorrhages or thrombosed capillary loops, dark-red in color, occur throughout the lesion, but especially at the margin. Under the dioscope, no alteration

(4) Jour. Cut. Dis., February, 1915.

in color of these dots is observed. Occasionally, there may be an accompanying fine desquamation.

The lesions enlarge by peripheral extension to the size of a dime, or even to that of a silver half dollar. Occasionally, discrete puncta are found independent of the teleangiectatic lesion. As the lesions enlarge, they clear in the center, producing annular formations. In such lesions the center is more or less deeply pigmented—yellow or brown—while the margin is of a red color and contains innumerable dots of a deeper red; or the center may be of the hue of the normal skin. Not infrequently, by coalescence of annular lesions, various configurations are produced; occasionally, linear lesions also occur. This picture constitutes the hemorrhagic-pigmentary stage.

Finally, after a more or less protracted period of quiescence, involution occurs. The lesions lose their sharp outlines, their margins become pale, assume a yellowish-brown color, and finally disappear. The pigmentation may last for months, but it gradually clears up. Usually, though not always, atrophy and alopecia are noted in the center of the lesion, the former more frequently than the latter. After the disease has disappeared, the atrophy or alopecia or both may remain as permanent sequels. This constitutes the atrophic stage.

The lesions of the disorder are seldom if ever perceptibly infiltrated. In MacKee's case there was slight superficial ulceration or excoriation, viewed by him as of secondary nature. There is never any erythema, edema, or clinical signs of inflammation.

The disease may run an uninterrupted course during the three periods, all lesions being of the same age, or there may be periods of remission and exacerbation. Not infrequently, new lesions continue to develop as the old ones disappear, so that all three stages may be seen in the same individual throughout many months.

The etiology is unknown. Male patients are most frequently attacked. The chief histologic changes are found in the blood-vessels. In the teleangiectatic stage, the vessels are dilated and show the early changes of endarteritis. The principal feature of the hemorrhagic-pig-

mentary stage is the obliterating endarteritis, which occurs in varying degrees of development, according to the stage of evolution. Throughout the corium, the vessels are ectased and may be increased. When the latter happens, they are likely to occur in groups, producing a lobulated appearance. A moderate round-cell infiltration occurs about the capillaries. Diapedesis of red blood-cells may be noted from the engorged and dilated blood-vessels. The endarteritis is due mainly to a swelling and proliferation of the endothelium, but in addition the media is apt to be thickened by swelling and a separation of its component parts. In some instances, this change in the media is the principal one. Alterations may be noted in the adventitia. This coat, however, plays an unimportant rôle in the process. Although the vessels in the papillary body are affected, the most marked changes are seen in the deep reticular layer and the hypoderm. Both arteries and veins are involved. In the later stages, the media undergoes hyalin degeneration. In some of the capillaries, the process advances rapidly, at one point producing a thinning and aneurysmal sacculatation of the vessels. For a time this is held intact by the resistance of the external elastic coat, but it eventually ruptures, with the production of free hemorrhage. In MacKee's case, coagulation necrosis was the end-result of the obliterating endarteritis, but usually the capillary is destroyed by hyalin degeneration.

In the terminal or atrophic stage, a marked reduction in the number of capillaries occurs, and the cell infiltration disappears. More or less edema occurs in corium, and the collagen presents slight degeneration and retraction. In the later stages, the papillae are obliterated. Numerous hemorrhagic and pigment foci are encountered. Elastin is reduced throughout and is entirely lost in the areas of infiltration. In many instances, the hair-follicles undergo atrophic changes, and may disappear completely. Similar alterations have been noted in the sebaceous glands, and to a lesser extent in the coil glands. Degenerative processes occur in the supporting structure of the coil glands. Edema, degeneration, and atrophy are noted in the non-striated

muscles. The hypoderm in the early stages shows areas of pigment and hemorrhage; later it becomes atrophic. In the early stages, the epidermis may show moderate acanthosis and be edematous, but later it becomes attenuated. In MacKee's case, excoriation of the epidermis was noted.

The author concludes as follows:

1. *Purpura annularis telangiectodes* possess clinical, morphologic, and histologic features that are unlike those of any other known dermatosis. It is, then, an entity.

2. The essential clinical characteristics are lentil-sized, light-red macules, in which especially at the periphery, develop dark-red, hemorrhagic puncta. The lesions enlarge by centrifugal extension, the center becomes pigmented, and perhaps atrophic, and an annular lesion is produced. The puncta are usually follicular. Evolution and involution are slow, requiring from six months to a year or more. The eruption always occurs on the lower extremities, occasionally on the upper extremities and the trunk. The disease can be divided into three stages: (1) telangiectatic; (2) hemorrhagic-pigmentary; (3) atrophic.

3. The essential histologic features consist of an endarteritis and an endophlebitis obliterans, which begin in the vessels of the hypoderm and gradually include the capillaries of the entire derma. The occlusion is caused by a proliferation of the intima or by a swelling of the tunica media, or both. The adventitia plays no important rôle in the process. The capillaries are widely dilated, and there is a diapedesis of red cells. A moderate perivascular lymphocytic infiltration is usually present. Finally, hyalin degeneration of the blood-vessels occurs, with the formation of tiny aneurysmal sacculations, which rupture, with resulting hemorrhage and pigmentation. Secondary changes, such as edema, atrophy, and degeneration, occur in the epidermis, derma, hypodermis, and adnexa.

4. The etiology is unknown, but is thought to be a toxin acting directly on the vessel-wall, or indirectly

through the nervous system. Syphilis and tuberculosis have been pretty definitely excluded.

5. This case demonstrated all the characteristics necessary for a diagnosis. It resembled, in nearly every particular, the classical description given by Majocchi. The exceptions are the lack of follicular involvement, the relapses, and the presence of epidermal excoriation, together with one or two minor pathologic changes (see Plate VI).

NEVI AND ANGIOMATA.

Nevus Epitheliomatosus Sebaceus Capitus. Frieboes⁵ reports the second case (Wolters, *Arch. Derm. Syph.*, 1910) of this interesting congenital tumor. It was situated in the scalp, and appeared as a flat, lumpy, yellowish-brown tumor, enclosing small islands of normal scalp, in which long hairs were to be found. There was no tenderness, no tendency toward malignancy, and no abnormal secretion.

The histology of this case was the opposite of the first one reported: in the first, there were numerous very large sebaceous glands and very few epithelial outgrowths.

Nevus Anemicus. This disease was first described by Vörner in 1906. Since then about fifteen cases have been reported by the Germans. Nanta and Lavau⁶ give a synopsis of the previously recorded cases, and add another to the list.

The authors believe that the condition is not so rare as the small number of case reports would indicate, inasmuch as Vörner saw six in as many years. Dermatologists have probably refrained from reporting their cases because of the slight significance which they attached to the condition.

The patient of Nanta and Lavau was a man 30 years of age, who had entered the clinic at Toulouse for the treatment of a syphilitic sarcocele. Disseminated over the dorsum of the left hand, extending up the extensor

(5) *Derm. Zeitschr.*, June, 1915.

(6) *Ann. dermat. et de syph.*, June, 1915.

surface of the forearm and outer surface of the arm, and thence spreading across the chest and back to the mid-line, were white, sharply circumscribed patches, which had existed without apparent change in size or shape since birth.

There was a great variation in the size and shape of the spots: the larger equalled the size of the palm of the hand; the smallest were punctiform. The outlines were markedly irregular: some areas were round, others polycyclic, and many were indented. In a few were found islands of normal skin.

Friction of the skin resulted in a greater contrast: the affected areas showed only slight and retarded erythema. Sustained pressure of the diascope caused the outlines to disappear completely, thus demonstrating that the condition was not vitiligo. Nor was it achromia for the hairs were of normal color. The sudoriparous glands were apparently normal, as also the reactions to heat, cold, and touch.

The most frequent location is the chest, and then the nucha and back. The extremities are rarely affected. It is nearly always unilateral and congenital, but Vörner has seen cases which were acquired and consecutive to local affections.

Seeger found all the epidermal elements normal, except the presence of dilatable vessels. Fischer, however, could demonstrate no abnormalities in the histologic picture. Stein found the venules and arterioles normal, but reduced in number.

The authors find it difficult to fit any one theory to the facts. The constant anemia is not due to a complete paralysis of the vasodilator nerves, because there is a reaction, slight though it is, to friction and heat. There might be conceived, however, a paresis of the vasodilators, resulting in a permanent vaso-constriction. Some cases are probably due to a vascular aplasia, while others are to be explained on the basis of vasomotor changes.

Angioma. Skinner⁷ reports a group of practically inoperable lesions which yielded to Roentgen rays.

(7) Jour. Missouri State Med. Ass'n., September, 1915.

The first patient, a baby aged 3 months, had a cavernous hemangioma at the inner canthus of the left eye. The tumor mass filled up the inner canthus and protruded beyond the anterior surface of the bridge of the nose, causing a long, oval swelling in the internal half of the left eyebrow. Deep Roentgenotherapy in massive doses was given at one séance, while the patient was under a general anesthetic. The treatments were repeated at 6 weeks, 4 months, 7 months, and 12 months, under anesthesia. Only about two millimeters of aluminum filtration, with lead mask adapted to the lesion, were used. A photograph of the patient one year after the treatment shows an exceedingly satisfactory result.

The second patient, a boy aged 11 years, suffered with a lymphangioma of the lower lip. In this patient there was a symmetrical enlargement of the entire lip, and the mucous surface was turned out, presenting a glazed surface without a wrinkle. Deep Roentgenotherapy in massive doses was applied to the right and left halves of the lip, with compression under thin glass. Two millimeters of aluminum filtration, and lead mask adapted to the right and left lip areas, were used. Treatments were repeated at 6 weeks and 3 months, with the result that the lip had resumed almost its normal size and was full of wrinkles.

In case three, a patient aged 18 years, had a lymphangioma of the tongue, which presented an elevated, fungus-like mass on the superior surface of the middle portion of the tongue. The treatment employed here was similar to that employed in the other two cases, using massive doses filtered through two millimeters of aluminum and a conical protection tube applied. Treatments were repeated at two-month intervals. The recession of the growth was slow, but eventually satisfactory.

The author states that each case presented a difficult, if not impossible, surgical aspect, and that the favorable outcome of such cases after careful Roentgenotherapy should promote the substitution of this method for surgical procedures.

ANGIOKERATOMA.

Angiokeratoma Corporis Diffusum. The classical location for angiokeratoma is on the extensor surfaces of the fingers, and the condition is usually associated with pernio. But there are, however, cases showing all the anatomico-pathologic characteristics of the disease without the classical localization, or the association with chilblains.

Stümpke⁸ describes an interesting case showing unusual distribution. The patient was a man 28 years old, who had first noticed lesions on the inner surface of the upper arm 14 years previously. These gradually spread to the trunk and the other extremities. The subjective symptoms were negligible, and for that reason he had never sought treatment. Two brothers, one older and the other younger, were similarly affected. The parents and six other children were without signs of the disease. The man was well-nourished, with no evidence of tuberculosis, which Pautrier thinks is sometimes the etiologic factor. There was a genital initial lesion, in which the specific organisms were found, but the Wassermann reaction was not yet positive.

Over the inner surfaces of the thighs, on the penis, scrotum, back and, in diminished number, on the upper extremities, were dark-red to grayish-red nodules, which were elevated and hard to the touch. Under the diascopé they not only did not disappear, but became more conspicuous. They were somewhat more numerous on the right thigh, and, coincidentally, the varicosities were more pronounced in the right leg.

Microscopically, the subepidermal plexuses were found to be dilated to the point of forming sinuses. Only one hemorrhage was found in the rete. The observation of Joseph and of Unna that the blood-spaces were surrounded only by epithelial cells was confirmed. In some areas extravasated blood was found showing signs of organization. There was no loss of epithelial cells, but rather a dipping downward of the papillae. Over the pathologic vessels the horny layer was thickened but

(8) Arch. Derm. Syph., April, 1915.

otherwise unchanged. As observed by Wieniewski, there was marked round-cell infiltration in some of the papillae, and also some of the sinuses were entirely surrounded by it.

The pathogenesis of this case is not clear. Obviously, tuberculosis played no rôle; nor will varicose veins explain the origin, inasmuch as the lesions were distributed over the back and upper extremities. Heredity, probably, was an important factor.

During the course of the antisyphilitic treatment there was a change in the lesions. Twice extravasation of blood, followed by healing, was observed.

PRECANCEROUS DERMATOSES.

Precancerous Dermatitis of Bowen. In 1913, Bowen described a new precancerous dermatosis, two cases of which he had observed and studied histologically. The epidermic lesions which characterize the disease are essentially a dyskeratosis.

Darier⁹ reports three new cases (one of which has already manifested malignancy), analyzes the cases described by Bowen, and discusses the classification of the new disease. He divides the dyskeratotic group in the following manner: (1) Darier's disease, which was mistakenly termed *Psorospermose folliculaire végétante*; (2) Paget's disease; (3) molluscum contagiosum; and (4) precancerous dermatosis of Bowen.

The disorder is encountered in patients who have reached, or passed, middle life, and in both sexes. It may begin anywhere on the trunk or on the extremities, as papulo-squamous, lenticular, or nummular lesions, which, by confluence, may form plaques. The essential lesion is a sharply circumscribed papule appearing on the normal skin. It is flat-topped or slightly depressed in the center, elevated from 1 to 3 mm., and firm to the touch. Some may be slightly villous, or even papillomatous. The color differs but slightly from that of the skin, and there is no halo at the periphery. The horny

(9) Ann. dermat. et de syph., June, 1915.

layer is thickened. Subjectively, there may be a slight pruritus.

During the evolution of the papule, it may become frankly hyperkeratotic and covered with a dry, horny carapace, which may later absorb moisture and form a yellowish crust. When the scale or crust is removed, the exposed surface is seen to be pink, moist, smooth, or granulomatous, and in rare cases covered with small papillomatous outgrowths.

There may be one or many foci, but the disease is never symmetrical. The lesions resist all treatment, even massive doses of Roentgen rays. Excision appears to be the only method by which they may be removed.

Cutaneous Cancer and Precancerous Conditions. A number of articles have recently been written on these conditions, describing their clinical appearance and etiologic findings, together with the various authors' opinions as to the most effective method of treatment. R. Sutton,¹ in a study of the part played by seborrhoeic keratoses in the pathogenesis of carcinoma of the skin, suggests that their importance is not appreciated by most physicians. The sites of predilection of these lesions are the face, scalp, trunk (particularly the interscapular and sternal regions), and the backs of the hands. Thirty-four pieces of tissue from thirty-one patients were used. Three varieties were differentiated histologically: the first a keratoid, characterized by great corneous hypertrophy, with some parakeratoses, a moderate degree of acanthosis, slight proliferative changes in the germinal layer, and more or less flattening in the papillary bodies; second, a nevoid type, which was practically identical with Unna's naevus seborrhoeicus; and, third, an acanthoid or verrucose form, distinguished by considerable hyperkeratoses, pronounced acanthosis, signs of exceedingly active proliferative changes in not only the stratum germinativum, but also at numerous other points in the rete, and enormous papillary hypertrophy. In these wart-like specimens, the cutis showed inflammatory changes of a subacute nature, with capillary dilatation, extensive pervascular infiltration, and small col-

(1) Jour. Amer. Med. Ass'n., Jan. 30, 1915.

lections of leukocytes and round and plasma cells scattered throughout the upper derma.

Of the thirty-four specimens examined, nineteen were of the keratoid variety, eleven of the nevroid, and four of the acanthoid. The keratoid lesions were considered the most dangerous. Nine patients who suffered from this type presented also active manifestations of carcinomatosis.

Conclusions: Seborrhoeic keratoses are the most frequent of all forerunners of prickle-cell cancer of the skin. In their production, age and exposure to sunlight and to wind are important factors.

The lesions are of three types: keratoid, nevroid, and acanthoid or verrucose. The keratoid are most liable to become carcinomatous.

The best plan of treatment is prophylactic. Failing this, the removal of the superficial layers of the growth by means of keratolytic, followed by thorough freezing of the base with carbon-dioxide snow, is the method of choice. Lesions which already exhibit signs of malignancy should be excised. If, for cosmetic reasons, excision is inadvisable, Roentgen therapy or radium may be tried. Under no circumstances should silver nitrate or other superficial caustics be employed.

Every person presenting the symptoms of seborrhoeic keratosis, particularly if the lesions be of the keratoid type, should be warned of the danger incurred by neglecting treatment. Carcinomaphobia is to be deplored, but wilful neglect is inexcusable.

CANCER.

Epitheliomas. In a clinical review of cutaneous cancer, Pollitzer² says that cancer of the skin, as distinguished from epithelioma, is always secondary to cancer of the breast or of an internal organ. Cancer of the skin secondary to visceral cancer (true metastatic deposit by way of the blood-stream) is rare; while cancer of the skin secondary to mammary cancer is more fre-

(2) New York Med. Jour., July, 1915.

quent. A rare form of this latter variety is cancer *en cuirasse*, which presents striking characteristics.

He groups the various forms of epithelioma into two classes: the superficial, flat, or discoidal; and the deep, or nodular. Paget's disease is a special form, not falling into either of these groups.

Concerning frequency of occurrence, during the first 14 years in which statistical reports of the American Dermatological Association were made, the ratio of epitheliomata to the total of skin diseases reported was 87 in 10,000 cases; during the last 10 years, 190 in 10,000, showing a marked increase. About 75 per cent. of all epitheliomata occur on the head, chiefly on the face; and perhaps one-half of the remainder on the hands. This fact is suggestive etiologically, as these parts are most exposed to extraneous influences—traumata of all kinds, ranging from direct physical injuries to the more subtle influences of a thermic and actinic nature. The action of sunlight in producing epithelioma is seen in xeroderma pigmentosum, and, combined with wind and cold, in "sailor's skin." A similar example is seen in Roentgen-ray epithelioma. Direct injury, such as bites on the hand, and prolonged irritation (as in chimney-sweeps and workers in paraffin and tar and pipe smokers) are also responsible. Burns from iron fireboxes on the abdomen and thighs in natives of Kashmir caused epitheliomas in those locations in 71 per cent. of a total of 1189 epitheliomata noted. Other irritations and cutaneous disturbances leading to epithelioma are keratoses of all kinds, chronic ulcers, old plaques of psoriasis, lupus, leucoplakia, irritations from sharp teeth, moles and warts.

The author says that a mole should be completely excised or let alone; and that thoroughness in the removal of an epithelioma by whatever method used is demanded.

Differential Diagnosis in Various Forms of Epithelioma. In a discussion of the differences between prickle-cell and basal-cell epitheliomata as to origin, clinical appearance, and treatment, Hazen^a says that

(3) Jour. Amer. Med. Ass'n., March 20, 1915.

basal-cell neoplasms frequently spring from seborrhoeic keratoses, and from various other keratoses, such as those due to arsenic, and from cutaneous horns; from sub-epidermal nodules (fibromas, sebaceous cysts, epithelial growths originating in the appendages of the skin); from various over-growths of connective tissue and epithelium; and rarely from lupus, syphilis, psoriasis, blastomycosis, leg ulcers, or sinuses.

They may be multicentric in origin, and are found usually on the face, neck, and scalp, more rarely on the shoulders; seldom on the limbs and mucous surfaces. They never metastasize. On section, they present small alveoli and small cells, but whorls and pearls are absent. They last for years, and rarely terminate fatally. Thorough local removal is indicated.

Prickle-cell cancers rarely arise from seborrhoeic keratoses, unless they are situated on the hands; but they more frequently follow arsenical and Roentgen-ray keratoses. They also originate in scars, sinuses (of osteomyelitis, and mastoid disease), leg ulcers, wens, and various dermic dermatoses. They have a single point of origin. They are situated commonly on the mucous membranes (lip) and the extremities, but may occur on any part of the cutaneous surface. They usually metastasize to the regional lymphatics. The metastatic growth may be long delayed in making its appearance. On section, the alveoli are large and whorl-formation common, together with epithelial pearls. The individual cells are large and stain intensely with acid dyes. The prognosis is more grave, on account of metastatic growths, which terminate fatally. Treatment consists in excision of the lesion together with the regional lymphatics.

Cancer of the Extremities. Hazen,⁴ in a review of cases of cancer of the extremities which had been seen at the Johns Hopkins and Freedmen's hospitals and in his own practice, presents the following interesting facts:

Of fifty-eight cases of this class of cancer, thirty-seven were of the prickle-cell type, four of the cuboidal-cell and ten of the basal-cell type, five were malignant warts, and two malignant moles. The points of origin of the

(4) Jour. Amer. Med. Ass'n., Sept. 4, 1915.

thirty-seven cases of the prickle-cell type were as follows: Roentgen-ray dermatitis, two; scars of burns, eight; scars of trauma, six; ulcers, two; warts, seven; senile growths, two; pimples, four; arsenical keratosis, one; blastomycosis, one; bone sinus, one; undetermined, three. Twenty of these patients were followed for three years, and eleven showed metastases. The basal-cell cases arose as follows: from ulcers, six; scar of burn, one; pigmented mole, one; pimple, one; nodule, one.

On account of the large percentage of metastases which occurs in the prickle-cell type, Hazen emphasizes the importance of determining the nature of the growth before attempting its treatment. He believes, from a study of these figures, that prickle-cell cancer of the skin is comparable to cancer of the breast, tongue or lips, and the treatment should not consist in the local removal alone. He concludes:

1. Carcinoma of the skin of the limbs is not a common affection.

2. The majority of skin cancers arising in these locations are prickle-cell neoplasms, and the majority of these metastasize, some at an early date.

3. Inasmuch as a certain diagnosis can only be made in the early cases by the gross or microscopic appearance, and inasmuch as it is usually deemed unsafe to excise a bit of the tissue for examination, it is plain that the proper procedure is to excise the growth *in toto* and make the diagnosis from the entire growth. If it is found to be of a cuboidal or spinal-cell variety, the neighboring glands should be removed.

4. The basal-cell growths can be treated by local removal with perfect safety.

5. It is possible that the prognosis in some cases of malignant mole is not absolutely bad if a wide local and glandular operation is done at the outset.

6. Malignant growths always arise from a pre-existing deformity, so are usually preventable.

Cutaneous Cancer. An interesting case of epithelioma of the hand following traumatism is recorded by Howard Fox.⁵ The patient whose case is recorded was

(5) Jour. Cut. Dis., January, 1915.

a man aged 48, a teamster by occupation. Two years before the patient was examined, he was bitten by a horse on the back of the right hand. This caused an open wound at the junction of the fifth metacarpal bone and first phalanx. The lesion healed in two weeks. Five or six months later, an open sore appeared on the back of the right hand, which gradually extended in area, became red, swollen, discharging, and crusted. On examination, the entire dorsal surface of the hand was seen to be swollen, edematous, and tender. Upon this area were serpiginous, rather sharply bordered, ulcerating, and crusted lesions. The central portion was covered with epidermis, but was swollen, opaque, and tender. By pressure on almost any portion of the back of the hand, a considerable amount of thick, yellowish pus could be expressed.

The clinical picture was that of a granuloma due to tuberculosis, blastomycosis, actinomycosis, or possibly syphilis, complicated by an extensive suppurating cellulitis. A biopsy revealed the condition to be a squamous-cell carcinoma.

As the patient refused operation, he was treated with x-rays and wet dressings of potassium permanganate. Internal metastasis soon followed, from which the patient succumbed in the course of four months.

The reporter states that an interesting and peculiar feature of cancer of the hand, as well as of the extremities, is its comparative benignancy, in spite of the fact that histologically this type of the disease is malignant. There can be no doubt that the large majority of cancers of the extremities are of the squamous-cell type. In this case, the disease had existed for two and one-half years as a purely local disorder before metastasis occurred. The author concludes:

1. Epithelioma of the hand is a comparatively rare disease.
2. In the vast majority of cases it occurs on the dorsal surface.
3. As a rule, in spite of being histologically a malignant type of cancer, it runs a slow and relatively benign course, seldom invading the lymphatic glands.

4. The majority of cases develop on a base of chronic inflammatory tissue; very few develop following a single traumatism.

Xeroderma Pigmentosum. This rare and interesting disease has been noted in this country recently by four observers. Grindon⁶ reported two cases occurring in a family residing in southeastern Missouri. Two children aged nine and four respectively were affected; two, aged seven years and six months respectively, were free. The cases, which were classical examples of the disease, were demonstrated before the American Dermatological Association, at its annual meeting held in Chicago, in May, 1914.

Kessler⁷ recorded the disease occurring in two children of a family residing in Iowa. The affected children were aged respectively six and eight years, and the disorder began in each case at the age of two and one-half years. Two small tumors were excised for microscopic examination, which revealed a squamous-celled carcinoma. Each patient was treated at weekly intervals with autogenous serum, one receiving five, the other six, injections. The author concluded that some improvement followed this treatment, which, however, was supplemented by daily applications of theobroma.

A third family group was observed by Waugh,⁸ in which two children suffering with the disease were seen. There was a history of a third child having been affected, but this child had previously died of pneumonia.

Corlett⁹ recorded two cases, one a classical example in a child three years of age, in whom the disease began in the fall, following a severe sunburn. The tumors in this case were said to be of the prickle-cell type, and the child exhibited all the usual features of the disease, from which it died. Corlett's second case, classed by him as closely allied to, if not identical with, the first, was in a man aged 70. The cause in this patient was believed to be the irritating effects of the sun's rays. The author concludes: "That the disorder is dependent

(6) Jour. Cut. Dis., 1915, vol. 33.

(7) Jour. Am. Med. Ass'n., July 24, 1915.

(8) Ormsby, Diseases of the Skin, 1915, p. 652.

(9) Jour. Cut. Dis., 1915, vol. 33.

primarily and essentially on an inherited susceptibility or predisposition, which is called into action by certain rays of the solar spectrum, seems largely probable." He warns against sudden or protracted exposure to the sun's rays in people unprotected by an immunizing coat of tan, particularly in the case of infants.

Acanthosis Nigricans. Frick¹ reports the case of a patient in whom the usual malignant growth occurring in some of the internal organs was not demonstrated clinically, though there had been for some years a duodenal ulcer present, which produced marked symptoms and which, through perforation, caused the patient's death.

The patient was a farmer, 42 years of age, and presented pigmented and papillomatous lesions on the neck, in the axillae and the perineal regions. The entire cutaneous surface showed some pigmentary changes, and there was involvement of the mucous membrane of the tongue, lips, and cheek. In the latter situation the changes described were thickening, furrowing, and paleness of the mucous membrane.

A second case of this rare disorder is recorded by Markley² as occurring in a woman aged 54, in whom the disease had been present for eight months. It began with intense itching over the abdomen, which was soon followed by the appearance of numerous warts over the backs of the hands and forearms, and this soon followed by desquamation about the neck and face. After four months, the growth began to appear on the tongue and palate, and from that time on rapid progression occurred.

On examination, the following findings were noted: Innumerable hard, papillary excrescences, of varying sizes up to that of a pea, were noted on the backs of the hands and extensor surfaces of the arms. The skin about the wrists was thickened, fissured, and of a dark grayish hue. There was marked keratosis palmaris. The axillae were deeply pigmented, and in this region were many soft filiform warts. Gray to sooty-black pigment

(1) New York Med. Jour., July 31, 1915.
(2) Jour. Amer. Med. Ass'n., Sept. 11, 1915.

changes, together with numerous papillary growths, occurred over the sides and back of the neck and the shoulders. There were also pigment changes on the face and a few warty growths on the forehead. The ciliary borders were granular, and in this region were many large, soft papillomas, and the auditory canal and nasal orifices were surrounded by a rim of small filiform growths. The mucous membrane of the mouth showed marked changes. The vermilion borders of the lips were wholly occupied by small and large papillary excrescences. The dorsal surface of the tongue was covered by long filiform projections, and the hard palate was completely filled in by a dense condylomatous mass. Smaller masses protruded from each interdental space on the gums, both on the superior and inferior maxillae. The inner surfaces of the lips and cheeks were but slightly affected, and the fauces and pharynx were normal. In the genito-crural region the changes consisted merely of hyper-pigmentation.

In view of the connection of this disease with internal malignancy and of a history of ulcer of the stomach in this case, an operation was performed with the expectation of finding a cancer of the stomach. After a most careful search, nothing abnormal was found in the abdomen, except a single gall-stone. At a later date, the subclavicular lymphatic glands began to enlarge, but a skiograph did not reveal the existence of a malignant process in the chest cavity.

The writer discusses the two types of cases, the early and non-malignant, and the later malignant ones, and concludes, first, that the development of acanthosis nigricans in the adult is an indication of some serious internal disorder, the most frequent of which is cancer; second, the frequency of this association justifies the assumption of a diagnostic relation between the two conditions; and, third, notwithstanding its rarity, acanthosis nigricans should be promptly recognized and an effort made to locate and if possible remove a malignant growth, even though no other evidence of its presence exists.

SARCOMA.

Idiopathic Hemorrhagic Multiple Sarcoma of the Skin. In view of the rarity of this disorder in this country, additional reports by competent observers are always of value. Wise^{*} reports the case of a patient, aged 51, in whom the eruption first appeared, six months previous to the examination, as blue spots on the inner surface of the left thigh. A month later, a small purplish patch appeared on the tip of the nose, and a small elevated nodule under the left eyelid. These were followed by lesions of similar appearance on the lower extremities. One of the latter, on the dorsum of the left foot, was slightly tender. At the time of the examination, the lesions were found in the above-mentioned areas, and were described as flattened nodules and plaques, varying in size from that of a split-pea to a dime and larger. They were described as being violaceous, dark purplish-blue, reddish-violet, and purple-plum colored. They were practically devoid of subjective symptoms, except one, which is described as being slightly tender on pressure.

The chief changes histologically were noted in the corium. Immediately below the epidermis was a narrow band of degenerated collagen; below this and extending into the subcutaneous tissue was a dense connective-tissue structure, in which there occurred large numbers of newly-formed blood-vessels and lymph spaces. Compact masses of fusiform cells and collections of small round cells were also present. There was considerable blood extravasation and deposition of blood-pigment throughout the collagen. Marked endothelial proliferation was present in many blood-vessels, producing partial obliteration of the lumen. In the area of the new growth, the collagen was largely destroyed.

The clinical points given by the writer for the diagnosis in the case are the following: (1) The typical distribution of the lesions on the extremities and face; (2) the absence of pain; (3) the slow growth; (4) the reddish-blue and purple color; (5) the firm consistence of

(*) *Med. Record*, Sept. 25, 1915.

the nodules; (6) the blanching of one of the lesions under the dioscope, suggesting its angioma-like structure.

In the treatment of the disorder, the writer believes that the combined use of arsenic and *x*-rays would be of most benefit.

A rare and interesting case of generalized sarcomatosis is reported by Schalek and Schultz.⁴

P. N., white, Dane, laborer, aged 39, entered the hospital Dec. 1, 1914, referred by courtesy of Dr. C. F. Baumeister, Avoca, Iowa. His parents had lived to an old age. The patient had always been healthy up to the time of his present illness. There was no venereal history. Three weeks prior to his admission to the hospital, he noticed a small subcutaneous nodule on the inside of the left forearm, in the place of a pigmented papillomatous lesion which had existed for many years without appreciable change. From this time on new nodules appeared rapidly in different places, until they were present all over the surface, gradually covering most of the body. The lower extremities were least involved. Five hundred and sixty-three tumors were counted. At first they were subcutaneous, the size of a marble, and movable. As they grew larger, they became adherent to the skin above and to the fascia, muscles, and periosteum below. The elevation above the skin became gradually more prominent, reaching the size of a filbert to an orange. The largest were located on the right side of the neck and the inner surface of the elbow of the left arm. Their consistency was hard, almost wooden, with no soft or fluctuating areas. There was no tendency to degeneration and ulceration. The skin above and around the tumors was smooth, normal in color, except in a few, where hyperemia and telangiectases had been produced by compression of the superficial capillaries. The contour of the growths was globular, with a few nodular irregularities. The patient did not complain about itching or pain. He had lost considerable weight since the beginning of his illness and looked cachectic. He was in a slightly stuporous condition at the time of admittance, and very little information could be gained from him. Toward the last he had difficulties in breathing and swallowing, and frequently vomited undigested food. Blood appeared in the feces early.

Blood: Hemoglobin, 80 per cent. (Tallquist); red blood corpuscles, 5,170,000, the cells irregular in size and shape; white blood corpuscles, 7,180.

Urine: Amber, cloudy, with considerable sediment. Specific gravity, 1.030. No albumin, sugar, indican, or blood present; urates present.

Gastric examination: Total acidity, 38; free hydrochloric, 4.

(4) Jour. Amer. Med. Ass'n., June 5, 1915.

Lactic acid and blood absent. Considerable mucus and many food particles.

The temperature was nearly normal to the last. The pulse was rapid and feeble.

The patient was considered hopeless from the start, and a prognosis was made of a rapidly fatal ending, on account of the extreme involvement. Subcutaneous injections with Fowler solution, 5 drops daily, were tried without results.

On the eleventh day, the patient had involuntary bowel movements. From the tenth day on he could not swallow any food and had to be fed by nutritive enemas, which were not retained. He died on the sixteenth day after admittance to the hospital, dyspnea and cyanosis having been extreme during the last days.

“The chief pathologic interest relates to the distribution and structure of the tumors. In the skin these were most numerous, and most prominent on the arms, chest, abdomen, back, and thighs. The largest mass, which measured 8 x 5 cm. and protruded 4 cm. above the level of the surrounding skin, was present at the inner surface of the left elbow, at a point a short distance from the wart-like growth which had been removed thirteen days before death. Over the right zygoma was a mass 5 cm. in diameter, and beneath the chin another of equal size. The remaining innumerable nodules varied in size from this down to such nodules as were just visible. With the exception of the two large tumors mentioned, the skin of the face and neck was free. The skin over the largest and medium sized nodules appeared thinned and was intensely congested, with diffuse, bluish-red color. Over the summits of the smaller nodules fine, dilated, radiating vessels could be seen. No nodules could be seen on the forearms and legs, but very many could be felt beneath the skin and an occasional very small one could be palpated in the skin of the dorsal surface of the hands and feet. The skin felt firmly attached to the larger masses. The smaller ones were freely movable in the subcutaneous tissue. No nodules were present in the mucosa of the mouth. The superficial lymph-nodes were just palpable and apparently were not involved. There was no subcutaneous or omental fat.

“Within the body the distribution of the tumors was striking, in that, while nodules were present in uncountable numbers, the internal organs themselves were almost

entirely free. The heart muscle contained a few, the largest 1 cm. in diameter. Three were present beneath the capsule of the liver, the largest 7 mm. in diameter. Within the left suprarenal was a single mass 3 cm. One loop of the middle third of the ileum, which lay superficially in the lower half of abdominal cavity, contained several nodules, the smallest 5 mm.; the largest, which was flattened, mushroom-shaped, pedunculated, and protruding into the lumen, 1.5 cm. in diameter. With the exceptions noted, the internal organs were free of macroscopic tumors, and no tumor tissue was found on microscopic examination.

"The large number of nodules present within the body were scattered about in the mediastinal, the omental, the mesenteric, and the retroperitoneal tissues. Behind the upper end of the sternum was a large multilobulated mass, which completely filled in the space behind the manubrium. The posterior mediastinum contained numerous masses, most marked at the hilum of the lung, but not involving the bronchial lymph-nodes. In the omentum, the tumors, too numerous to count, varied in size from shot-like nodules to an ovoid mass $5 \times 5 \times 3.5$ cm. Most of the omental tumors were sessile, attached by very fine, long, fibrous peduncles. In the mesentery, nodules were also numerous, being largest at the root of the mesentery. Large numbers of tumors were present in the retroperitoneal tissue, the largest ones being present about the kidneys and suprarenals. The pelvic tissues and organs were free.

"The site of predilection for the tumors, both in the skin and in the internal tissues, was the loose areolar tissue. The nodules were sharply defined, pale, succulent, translucent, almost fat-like on section. The congestion noted over the large skin tumors was limited to the overlying skin.

"Microscopically, the alveolar arrangement of the tumor tissue is so pronounced as to suggest carcinoma. The alveoli are round, oval, or elongated in shape, and vary considerably in size. In some of the tumors, rather broad bands of dense fibrous stroma separate the alveoli; in others, only very narrow stroma bands are present.

Peripherally, the tumor tissue is sharply defined, often surrounded by a thin layer of fibrous tissue. Only in the suprarenal metastasis and in one of the myocardial nodules is there any evidence of invasion at the periphery of the tumor tissue. Growth appears to have been almost wholly expansive.

"The tumor cells vary in size and shape. The smallest, which are rounded or oval, average 18 microns in diameter. Somewhat larger cells are polyhedral, and the largest, which may measure 85 microns and more in diameter, are very irregular in outline. The nuclei are round or oval, vesicular, rich in fluid, with finely granular chromatin distributed in the form of a closely meshed network. Some nuclei are hyperchromatic. Most of the nuclei have distinct nucleoli, which stain deeply with hematoxylin. The larger cells are multinucleated; in many, the nuclei are multilobulated. The cytoplasm is homogeneous, dense, very finely granular, and stains rather deeply with eosin. The cytoplasm of some of the cells contains light-brown pigment so finely granular as to give the protoplasm a diffuse coloration. Mitotic figures are extremely rare. Evidences of direct division, on the other hand, abound, the great majority of the cells having nuclei in stages of direct binary fission or single or multiple budding.

"The most striking lesion, histologically, is the tumor removed thirteen days before death from the ulnar surface of the left forearm, just below the elbow. This, which originally had a wart-like appearance, had been present for many years. As has been noted, it had begun to grow three weeks before admission to the hospital. Half of it became transformed into a smooth, rounded mass, identical in external appearance with the multiple tumors which developed so rapidly later. At the time of removal the entire mass was 3 cm. in diameter and 0.8 cm. thick. It was sessile, attached by a short pedicle 3 mm. in diameter. One half had the rough, papillomatous surface of an ordinary wart; the remainder was round and smooth. Sections through the entire tumor show clearly the coarsely papillomatous character of the original tumor. The smooth portion is identical with

the tumor nodules present in the skin and in the deeper areolar tissues. In the papillomatous portion are seen all gradations, from the structure of a typical lymph-angioma hypertrophicum to that of the metastasizing endothelial tumor tissue. The gradations are not seen in a single papillary growth. The smaller ones contain numerous elongated and band-like or round nests of closely placed, small, irregularly cuboidal cells. A large amount of granular, dark-brown pigment is present beneath the epidermis; some occurs in cells between the lymphangiomatous islands, but the cells of the latter are free of pigment. An occasional thin epidermal downgrowth extends for some distance into the underlying stroma. In a medium sized papillary outgrowth the cellular alveoli are very closely placed and the individual cells are somewhat larger. In a still larger outgrowth occur numerous alveoli identical in appearance with the nodules elsewhere. In this and in the smooth, nodular half of the primary tumor the epidermis is compressed and thin, its under surface smooth.

“For the peculiar distribution of the tumors it appears difficult to offer a satisfactory explanation. The parenchyma of the internal organs remained almost wholly free of metastases. The superficial lymph-nodes, as well as the bronchial, mesenteric, and retroperitoneal nodes, were in general spared. In the clinical and post-mortem examination there was no evidence of obstruction to vascular or lymphatic channels, and similar evidence is wanting in the microscopic examination of the tissue about the tumor nodules, although particular attention was paid to this point, as offering a possible explanation of the peculiar distribution of the tumor nodules in the skin. In view of the large number of tumors and of their widespread distribution in the deeper tissues as well as in the skin, it appears necessary to suppose a generalized distribution of tumor cells by way of the circulation. But why the development of tumors from such cells was confined almost entirely to the loose areolar tissues is a point in explanation of which we can only suggest variations in tissue susceptibility or resistance.”

Sarcoid. Zeisler⁵ records a very interesting example of this disorder. The patient, a man aged 36, was first seen five months after the beginning of the cutaneous disease. The latter began as a red spot on the left buttock. On the following day, a similar lesion appeared on his cheek, which caused some itching and burning. New lesions followed in rapid succession on the face, arms, legs, and back, while the older ones became larger. The patient described them as pinkish nodules or swellings of the skin.

The disorder was considered to be syphilis, and salvarsan and mercury were administered, without any change in the lesions.

At the time of the examination, the lesions on the face are described as being sharply circumscribed nodules and infiltrated plaques, varying in size from that of a split-pea to a half-dollar. In color, they were brownish-red, at times almost bluish-red. They were superficially situated, easily movable, markedly raised above the level of the skin, and of tumor-like, firm consistency. Under the diascope, a yellowish-brown color was noted, which occasionally presented miliary foci; a few lesions showed fine telangiectasis.

In the lumbar regions there were about ten round tumors, dark-red in color, sharply defined, and varying in size from 0.5 to 3 centimeters in diameter. The left gluteal region was almost totally occupied by an irregularly outlined plaque, whose borders showed a distinct infiltrate, while the center was flattened, suggesting a peripherally progressing, somewhat serpiginous development. The color at the border was dark-red, while the center was light-brown. On the lower extremities, there were a few scattered symmetrical infiltrates of irregular contour, yellowish-brown in color and of lichenoid type. On the sole of each foot, there was a small brownish nodule. Near the elbows and wrists of both arms, several irregularly shaped plaques with raised borders and depressed centers were present. On the back of the right hand there were some small infiltrates, and on the thenar eminence of the palm were two brownish nodules.

(5) Jour. Amer. Med. Ass'n., Aug. 28, 1915.

There was one small lesion on the scrotum and several flat, lichenoid efflorescences on the glans. No tendency to ulceration was noted and the subjective symptoms were negligible.

The chief changes microscopically were noted in the corium, where a marked cellular infiltration was present, composed of epithelioid cells, round cells, and giant cells of Langhan's type. The blood-vessels showed varying degrees of endarteritis. The elastic tissue was thinned and plasma-cells were absent. The glands were unaffected.

A careful examination for tubercle bacilli and Much's granules was made, without result. Animal inoculations and tuberculin and luetin tests were all negative.

The treatment consisted of the use of Roentgen rays, mercurial plaster, carbon-dioxide snow, radium, and arsenic. The most benefit was derived from the latter preparation, when administered in the form of sodium cacodylate, given intravenously at weekly intervals.

ATROPHY OF SKIN.

Atrophy of the Skin and Syphilis. Wise⁶ reports a case of diffuse idiopathic atrophy of the skin in which lesions of syphilis were superimposed. In view of the fact that syphilis may induce cutaneous atrophy, the able discussion of the subject by this author is most instructive. He emphasizes the fact that the usual form of cutaneous atrophy due to syphilis is the macular, which occurs as spots or patches produced without previous syphilitic lesions. On the other hand, the coincidence of syphilis with diffuse cutaneous atrophy was found by the author to be exceedingly rare, only two or three such cases being on record. Wise describes the case of a patient, aged 45, in whom lesions of diffuse atrophy began on the hands at the age of 5 years. These lesions gradually spread up the forearm and arm, producing the typical classical manifestations of the disease. At the age of 23, the process began on the dorsum of the feet and

(6) New York Med. Jour., June 19, 1915.

spread gradually up the leg and thigh. At the age of 40, a new type of lesion appeared on the legs. These were lesions of syphilis, of the nodular and serpiginous type. On examination, the skin showed the following changes:

"When the patient first presented herself at the Vanderbilt clinic, her skin showed the following changes (see Plate VII). The hands, from the second phalangeal joints to the wrists, were reddish blue in color; the skin was wrinkled, glistening, parchment-like; the veins and tendons shone through the skin prominently. Almost in the middle of the back of each hand, the bluish-red color was replaced by a dollar-sized, irregular circular area, of a dirty-yellow color, with a smooth, shining, wax-like surface, somewhat resembling morphœa. In this area the underlying veins were not visible, but the tendon sheaths shone through distinctly.

"The integument of the forearms was everywhere bluish-red in color, thinned and atrophic in appearance, velvety to the touch and more or less wrinkled. There was a complete absence of follicles and not a trace of hair growth. Overlying the ulnar bones there was a narrow strip of skin in which the color, instead of being bluish-red as elsewhere, had more the appearance of the patches on the back of the hands—that is, a yellowish tinge, with a waxy sheen; over the proximal halves of the ulnar bones, these bands presented the wrinkled condition seen on the hands. The veins of the forearms were quite distinctly apparent, gleaming through the thinned skin.

"Over both elbows, the skin was loose, flaccid, shrivelled, and parchment-like, and, with the arm in an extended position, it hung in loose folds around the elbow-joint, as though the cutaneous envelope of the articulation was too large for its contents. The color was a mottled bluish-red; the superficial veins were distinctly outlined. On palpation, the skin was silky, soft, and inelastic. The skin above the elbows, almost to the middle of the upper arms, presented the same alterations as that of the forearms. The atrophic appearance gradually gave place to normal skin, there being only an in-

PLATE VII.



Atrophy of the skin and syphilis.—Wise (see page 79).

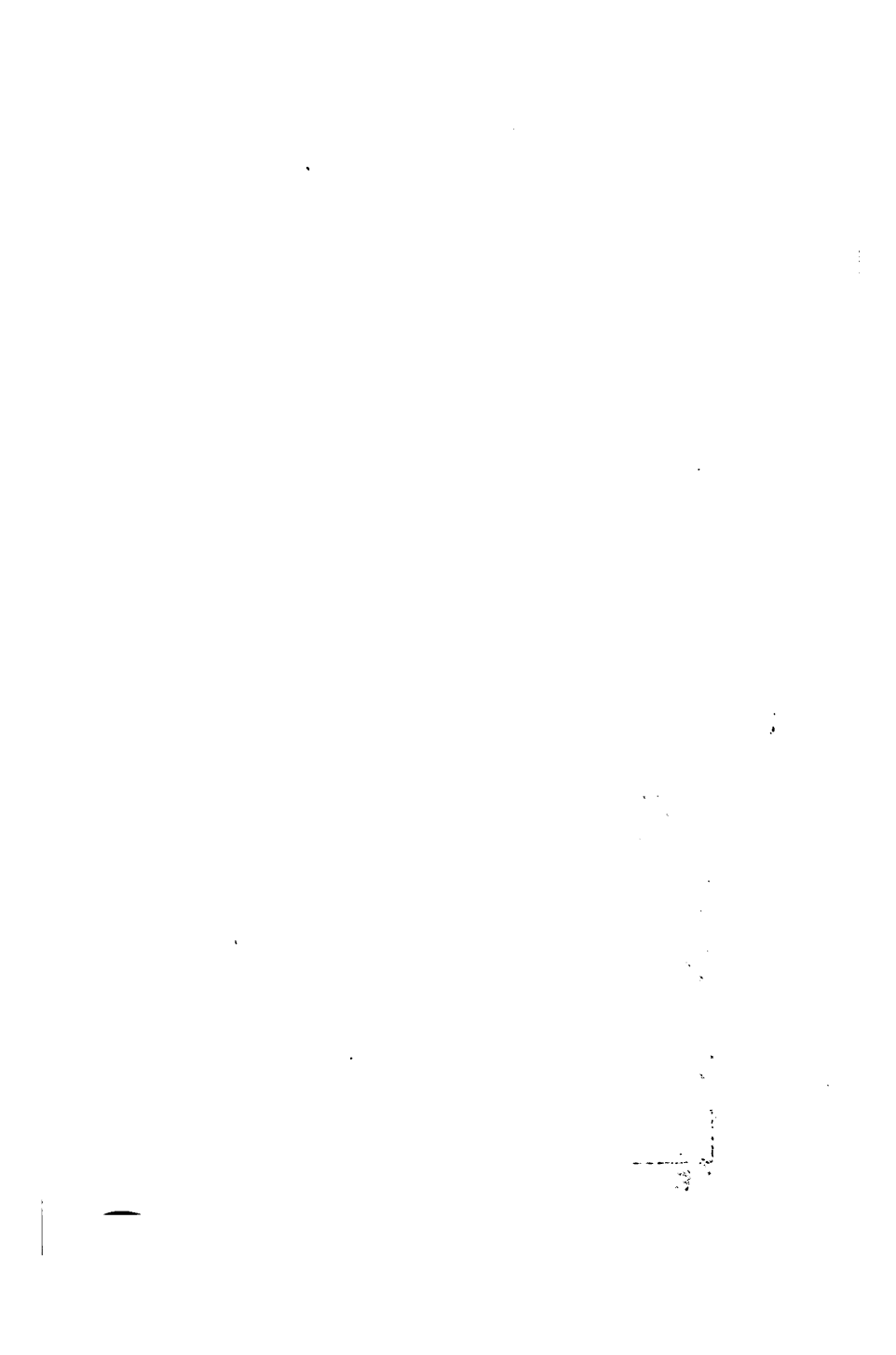


PLATE VIII.



Atrophy of the skin and syphilis.—Wise (see page 79).



PLATE IX.



Acrodermatitis atrophicans. Showing anetodermia of thighs and knees, scleroderma-like appearance of legs and ulceration around ankles.—Wise (see page 83).

PLATE X.



Acrodermatitis atrophicans. Showing "immune area" below Poupart's ligament, anetodermia of knees and thighs.—Wise (see page 83).



PLATE XI.



Acrodermatitis atrophicans. Showing anetoderma of thighs and buttocks and tense scleroderma-like skin of legs.—Wise (see page 83).

distinct line of demarcation showing the edges of the advancing process.

"The dorsum of the feet and the ankles presented a yellowish, waxy, tense, smooth covering, with numerous dirty-brown pigmented spots scattered here and there, some isolated, others coalescing into irregular scalloped lentigines. The tendon sheaths were prominent. The skin of the toes showed no changes. The lower two-thirds of the legs were incased in a more or less crusted envelope of keratotic skin; its surface was rough, a dirty-brown in color, showing irregularly scattered areas of elevation and depression. These depressions were for the most part smooth, atrophic scars, irregular in outline, waxy-yellow in color, and hard to the touch. Around the ankles they were confluent.

"This keratotic condition of the skin of the legs came to a rather sharply defined standstill at about the junction of the lower two-thirds with the upper third of the legs. On the left leg, the border was several inches higher than on the right. The edge of this advancing process was sharply defined, raised, roughened, and presented several superficial ulcerations, which gave rise to a little serosanguineous fluid.

"Above the keratotic areas, the skin of the legs was smooth, thinned, and velvety in appearance (not well shown in the photograph). The skin around the knee-joints presented essentially the same condition as that described around the elbows, only that it was in every way more marked. The skin was more loose and flaccid, and the wrinkling was more prominent. On the outer aspect of the right knee-joint, opposite the patella, was a semicircular, crusted, and nodular patch, about the size of a child's palm; it had the appearance of being imbedded in the wrinkled, loose skin of the knee-joint, the inner edge of the patch fusing with the patellar integument, the outer edge being raised and sharply defined. The skin above the knees presented the same changes as that of the forearms, *i. e.*, it was reddish-blue in color, thin, smooth, hairless, and velvety to the touch. Follicular mouths were not visible. A little above the middle of the thighs, the atrophic skin gradually merged

with the normal integument above; there was no distinct line of demarcation between abnormal and normal integument.

"The skin of the rest of the body, including the palms, soles, and face and scalp, was perfectly normal. The hair and nails showed no changes whatever.

"*Subsequent history:* Immediately after the results of the several Wassermann tests were learned, the patient was given the routine mercury salvarsan treatment. The nodular serpiginous syphilide of the lower extremities soon resolved, leaving typical yellowish, depressed, smooth scars (see Plate VIII). The portions of skin unaffected by syphilis remained unchanged.

"From this description it will be readily seen that we are dealing with two widely dissimilar conditions, namely, diffuse atrophy of the skin and a nodular, serpiginous syphilide of the skin, both processes appearing coincidentally in certain regions.

"The atrophy of the skin of the hands evidently began very early in life, for the initial appearances were actually looked upon as birthmarks. Idiopathic cutaneous atrophy beginning in infancy is an extremely rare occurrence, only a few cases being on record (Finger and Oppenheim). There is no reason to doubt the patient's history. The appearance of the upper extremities in this patient is in every way typical of the dermatitis atrophicans diffusa idiopathica, as described by numerous observers. An interesting feature is the presence of the so-called 'ulnar bands'—a clinical peculiarity more commonly associated with acrodermatitis chronica atrophicans (Herxheimer and Hartmann), but occasionally also seen in the ordinary diffuse cutaneous atrophies. Both upper extremities were absolutely free from clinical manifestations which could be associated with syphilis. Furthermore, vigorous antisyphilitic treatment produced no visible changes in the skin of the arms.

"On the lower extremities, we have the interesting circumstance of a typical serpiginous syphilide superimposed on a pre-existing atrophic integument. The atrophy of the skin of the legs and knees had existed for fully seventeen years before the first lesions of syphilis

appeared on them. It seems that in spite of the unusual soil on which the syphilitic changes were engrafted, the progress and clinical appearance of the latter were practically identical with analogous luetic efflorescences occurring on healthy skin. In our patient the normal regions of the skin were free from syphilis, only the atrophic areas being the seat of syphilitic manifestations."

A summary of the histologic changes is given as follows:

"Broadly speaking, it may be said that the syphilitic portion of the tissue depicted the characteristic changes common to that disease, while the atrophic part revealed the actual microscopic appearances commonly seen in the late stages of atrophying dermatitis. There was no abrupt line of demarcation between the two disease processes to correspond with the clinical appearance (Plate VII). One feature, as was to be expected, was common to both halves of the section; namely, a great diminution of elastic fibers in the *pars reticularis*, with complete disappearance of the elastic tissue in the *pars papillaris* of the corium, the remaining elastic fibers showing marked fragmentation and cloudy swelling. There were no sebaceous glands and hair-follicles throughout the section; coil-glands were not encountered in the tissues examined. In the syphilitic area, the blood-vessels showed the characteristic thickening of their external and middle coats, partial and complete obliteration of their lumina, and perivascular lymphocytic and plasma-cell infiltrations. Similar vascular changes were present at a considerable distance beyond the edge of the syphilitic process, invading the atrophic portion of the section. In the latter, the blood-vessels were few and far between; some of them were surrounded by a moderate collection of lymphocytes and plasma-cells, while others were entirely free from cellular infiltrates. Most of them showed evidences of endothelial proliferation, with partial and complete obliteration of their lumina."

Cutaneous Atrophy. During the past few years, much has been written on the subject of diffuse atrophy

of the skin. A sub-variety, or a new clinical entity, was described in 1902 by Herzheimer and Hartmann, under the title "Acrodermatitis chronica atrophicans," which aroused much interest. A clear exposition of the question is given by Wise,⁷ with a recapitulation of the chief points in diffuse atrophy, as follows:

"*Atrophia Cutis Diffusa Idiopathica.*" "The disease usually begins by the appearance of plaques showing variations in color from bright red to dark bluish-red. Two types may be differentiated: the plaques may be bright red, rather sharply circumscribed, disappear completely under pressure, and are covered with thin, branny scales; or they may be bluish-red, indistinctly outlined, cyanotic in appearance, and without desquamation. In the first type, the appearance is that of a mildly inflammatory erythema, while in the second it resembles a passive hyperemia. These plaques spread out and become confluent, their coalescence being sometimes preceded by the formation of irregular, network-like stripes and bands. Thus larger areas of the skin become involved, while new plaques are forming in the vicinity, or at distant portions of the integument. Shortly after these appearances, signs of anetoderma supervene, becoming apparent in the flaccidity of the skin. The thinning and wrinkling usually begin in the central portions of the plaques, without manifesting any marked changes in their original red color. The first change consists of a fine wrinkling of the superficial layers, apparently affecting only the epidermis in the beginning, leaving the appearance seen after the regression of an acute edema. The clinical picture of a fully developed atrophying dermatitis is rather constant and uniform, varying somewhat in respect to its localization. The skin is dark-red, bluish-red, and brownish-red; from an intermingling of pigmented and depigmented spots, it may assume a mottled, multicolored appearance.

"The skin is markedly thinned, and is so translucent that the underlying veins, tendons, and nerve-strands shine through distinctly and appear prominently. Lifting a fold of skin, one has the impression of having a

(7) Arch. Diag., January, 1915.

piece of silk between the fingers; large folds of skin may be raised very readily, due to its loose attachment to the underlying tissues; allowing the fold to escape the fingers, the skin very slowly assumes its former position. Wrinkling and creasing of the skin are marked, Pospelow comparing it to wrinkled cigarette paper; others have compared it to the skin of a baked apple.

"In extensive cases, the larger folds show a disposition to follow Langer's lines of cleavage. On the back, there is a linear configuration following certain paths, beginning opposite the spine, diverging gradually downward and outward, then arching upward over the lateral portions of the thorax, thence converging over the chest wall with an upward trend. Around the mammae, the folds of skin assume a roughly circular disposition, while over the nates they form flattened segments, extending from the outer and upper to the lower and inner portions of the glutei, then bending upward toward the crena ani. Around the elbows and knees the folds are arranged in a roughly concentric manner, the arches increasing with the distance from the articulation. Over the extensor surfaces of the wrists and ankles the folds are arranged parallel with the underlying tendons. In localities where the skin is normally loose and easily folded, as on the backs of the hands, on the knees and elbows, the wrinkling and fold formation are most prominent; also where there is much subcutaneous fat, as over the buttocks and mammae. The least amount of wrinkling usually takes place over areas where the skin lies near the bone, as over the tibia and ulna, and at the borders of the erythematous plaques which precede the atrophic areas. The surface of the skin is exceedingly dry, free of sweat and fat; the hair is sparse, or may be entirely absent. In some areas, there is a fine, branny desquamation. The scales may be firmly attached and lend to the skin a mother-of-pearl shimmer. The knees and elbows are areas of predilection for the desquamation. The blood-vessels of the skin appear in two shapes. The sub-papillary vessels form a fine, bluish-red network, in spots distinctly visible through the translucent integument. Such an appearance is, how-

ever, somewhat unusual. The subcutaneous veins, especially those on the legs, form prominent, sinuous blue strands of varying thickness, some raised considerably above the surface of the thinned skin; others are not engorged or dilated, but appearing as broad blue bands gleaming beneath the skin. These veins form a network most prominent in the atrophic areas; in the erythematous and infiltrated plaques they are absent.

“Such is the clinical appearance of a typical case of atrophia cutis idiopathica. Other cases show certain modifications of this picture. In about a third of the reported cases the dorsal surface of the feet, the anterior aspect of the legs, and sometimes also the forearms, present a condition resembling scleroderma. Instead of the reddish and bluish wrinkled skin commonly seen over these regions, the integument is stiffened, appears to be tense, markedly yellow-white, and can be folded only with difficulty. The borders are usually indistinct; sometimes there is a peripheral zone of wrinkled, reddish-brown skin, fusing with the adjacent normal skin. On the leg, this condition is usually seen over the lower third of the tibia anteriorly, extending to the anterior surface of the ankle and fusing with the normal or atrophic skin over the dorsum of the foot. The skin appears to be tense—an insufficient envelope for its contents—causing a prominence of the underlying tendons, which appear as yellow and white strands. The integument is smooth, of a waxy sheen, sometimes speckled with brown pigmented spots. The veins, partly dilated, are prominent and distinctly visible, while the circumference of the leg and foot may be diminished. These appearances are designated by the term ‘scleroderma-like’; they differ from scleroderma chiefly with respect to the thinning and translucency which is characteristic of them.

“These scleroderma-like areas occurring together with cutaneous atrophy have formed the subject of considerable investigation by several authors. The differentiation between atrophy of the skin and the diffuse and circumscribed forms of scleroderma, the possible relations existing between the two, and the incidence of both dis-

eases appearing in the same symptom-complex, have been so thoroughly dealt with in an article by Rusch, that further comment here would seem superfluous."

Wise gives as the salient points in *acrodermatitis chronica atrophicans* the following:

"Acrodermatitis Chronica Atrophicans." "The disease begins on the back of the hands or feet, or both, in the shape of inflamed patches and edematous, soft, doughy infiltrations. In the great majority of cases, the skin of the fingers and toes remains normal throughout the entire course of the disease. The areas of predilection, in the beginning, are the extensor surfaces of the forearms and legs. Itching is moderate, or may be absent. The infiltrations are bluish-red in color, remaining one of the nodules of erythema nodosum, without being as sharply circumscribed. These infiltrations must not be confounded with the bluish-red, prominent, hemispherical, hard, sharply circumscribed tumors which appear in the neighborhood of the knees and elbows in the end-stages of *acrodermatitis atrophicans*; these occur only in association with advanced atrophy of the skin. The primary soft, doughy nodules mentioned above, in the course of weeks and months, gradually assume a bluish and cyanotic appearance, become flattened to the level of the surrounding skin, while the overlying epidermis becomes wrinkled into fine folds. As the infiltration recedes, the wrinkling becomes more marked, the area is bluish-red, transparent, thinned, gradually assuming the appearance already described under diffuse cutaneous atrophy. The disease advances upward, toward the groins and shoulders, by means of the peripheral extension of the active border of the process, not by the fusing or coalescence of scattered areas of inflammation or infiltration. In other words, the disease progresses centripetally. On the lower extremity, in the typical cases, the process advances upward to within two or three inches of Poupart's ligament anteriorly; leaving a triangular area on the inner and upper aspect of the thighs free. Posteriorly and on the outer aspect of the thighs, as well as over the buttocks, the process extends upward toward the trunk, coming to a standstill

at the crest of the ilium. The anetodermia, in the advanced cases, is most marked over the knees and buttocks. In the final stages, the appearance of the skin is similar to that described under atrophia cutis idiopathica.

"On the upper extremity the process advances to a short distance above the elbow-joint. During the infiltrative or pre-atrophic stage, a characteristic phenomenon is the appearance of the so-called ulnar band. This consists of an infiltrated band of skin overlying the ulnar bone, extending from the wrist to the elbow. In the course of months or even years, this strip becomes thinned, wrinkled, atrophic, and translucent, its borders gradually merging with the adjacent integument. In some cases the strip is quite sharply margined, so that the contrast between it and the surrounding skin is quite obvious. An analogous strip less often appears over the tibia. The ulnar band appears so consistently in acrodermatitis chronica atrophicans that it may be regarded as a characteristic symptom of this type of atrophy.

"The above brief description applies to the ordinary types of acrodermatitis chronica atrophicans, of which the writer has seen a half-dozen cases in the last ten years. Variations and modifications of this clinical picture are described in the literature. A common sequel to the process is the appearance of the hard, globular tumors near the knees and elbows, mentioned above. According to Finger and Oppenheim, these may also appear in atrophia cutis idiopathica, but, according to others, with far less frequency. The scleroderma-like alterations of the integument over the legs and forearms are also common in acrodermatitis atrophicans. The translucency of the skin, the anetodermia, the chronicity of the process, the absence of subjective symptoms, the maintenance of the general health, are points common to both forms of the disease. The chief points upon which Herxheimer and Hartmann lay stress in their original description of acrodermatitis atrophicans are:

"1. The occurrence of a primary inflammation and infiltration preceding the atrophic process.

"2. The beginning of the disease on the backs of the hands and feet.

"3. The slow and insidious centripetal progression, the disease advancing by means of a gradual spreading of the active border.

"4. The limitation of the process to certain areas of predilection.

"5. The presence of the ulnar (and tibial) band.

"A comparison of the two types of atrophy in parallel columns may bring out the differential points more clearly:

Acrodermatitis Atrophicans.

*Atrophia Cutis Diffusa
Idiopathica.*

Atrophy preceded by inflammation, edema, infiltration.

No clinical manifestations of inflammation and infiltration precede atrophy.

Begins on the back of the hands and feet, fingers and toes usually being free.

May begin on any part of the body.

Advances centripetally by the gradual extension of the active border of the process.

Large areas are usually formed by means of the coalescence of previously scattered foci of the disease.

Areas of predilection are the upper and lower extremities. Usually an 'immune' triangular area below Poupart's ligament.

No areas of predilection.

Process usually comes to a standstill opposite the crest of the ilium.

Not characteristic.

There is no configuration of skin-folds following the lines of cleavage.

Process usually advances over the trunk.

The presence of the ulnar (and tibial) bands.

Usually seen on buttocks, back, and mammae.

Usually absent.

"In conclusion, it may be said that those observers who still regard the two types of cutaneous atrophy as one and the same clinical entity have good reason to adhere to their opinions, the question being a debatable one. To the writer it seems that the two clinical pictures may well be separated; their separation, however, being justified only by the sum total of their characteristics" (see Plates IX-XI).

GLOSSITIS.

Glossitis. There appears to be much confusion concerning the types of inflammation of the tongue that occur outside of those produced by syphilis. The special type described by Moeller in 1851 appears to be important, though very few reports have been made concerning this disorder. The literature on the subject shows much confusion, and as a rule this type has been classed with a superficial variety which has been known under a number of different names, particularly "multiple benign plaques of the tongue." A very interesting and valuable contribution to the subject has been made by Harris,⁸ in which the various cases described in the literature have been reviewed and two personal cases described.

According to Harris, Moeller's original description of this type of inflammation is as follows:

Chronic excoriations occur not uncommonly on the tongue in the form of irregular, sharply defined, intensely red spots, from which, apparently, the epithelium has desquamated, or at least has become thin, and in which the papillae appear hyperemic and swollen, and therefore somewhat elevated above the normal. Never do these areas show an abnormal secretion, nor do they develop an ulceration. They show only slight tendency to extend laterally, but persist in the same size and form in spite of all forms of treatment. The disease occurs principally on the tip and borders of the tongue, and sometimes on the under surface and inside the lips. The excoriations cause a very severe burning, which, in spite of good appetite, renders eating of all foods, even the mildest, almost impossible. The sense of taste is dulled, and the articulatory movements of the tongue are at times somewhat painful.

The first case cited by Harris occurred in a woman of 66, whose history, aside from this present disorder, presented nothing of interest. The disorder of the tongue began six years previously as a pinhead-sized, irritated spot on the tip of the tongue. This gradually

(8) Jour. Cut. Dis., November, 1915.

spread, until at the time of the examination it involved practically the whole tongue anterior to the circumvallate papillae, and at times the mucosa of the lips, mouth, and larynx. The eruption on the tongue consisted of irregular, beefy-red areas, the fungiform papillae of which were swollen and elongated, and could be separated from each other as can sealskin fur. The filiform papillae were absent, or were so short as not to be demonstrable. There was no ulceration, bleeding or discharge. The reddened areas were extremely sensitive to stimuli of all kinds—change of temperature, salty, acid or spiced foods, or even slight pressure. Because of the extreme burning and pain, which radiated toward the ear, most of the time since the onset, the patient was unable to eat solid food, and for the past three years had been unable to wear her artificial teeth, on account of the pain induced when the teeth came in contact with the tongue. During this period the nutrition had been interfered with on account of the suffering encountered during eating and she had lost over sixty pounds in weight.

Surrounding and between the red areas the mucosa was smooth, of an opalescent color, and it was difficult to distinguish any papillae of any kind. In these areas there was no change in the sensation. From time to time, the location of the spots changed, so that the red areas became white and the white ones became red. In this way, a great variety of appearances was produced. Occasionally, for short intervals, the tongue would become nearly normal, and during these interims the patient could eat with comfort. General examination revealed no findings that were significant.

The second patient, a woman aged 52, had suffered with the condition for four months, and complained of soreness, burning, smarting, and itching of the tongue, especially of the tip and dorsum, and to a less extent the edges, also the inner side of the lower lip and parts of the roof of the mouth. The condition interfered with eating, in that solid food produced pain, acids and spiced foods causing severe pain. On this account, the patient lived on liquid and semi-solid foods.

The tongue on the dorsum showed irregular red and lighter areas, the latter being smoother and the papillae obscured. The red areas were of an intense color, the fungiform papillae swollen and more distinct than normal, and these areas were sensitive. There was no ulceration and no bleeding or other discharge. The inside of the lip was smooth and intensely red.

From time to time the condition showed exacerbations and remissions. During the time the patient was under observation, treatment made some impression on the condition, but did not relieve it.

In a review of the literature, in which some twenty cases were discovered, Harris found that the cases presented a pretty uniform symptomatology, which may be summarized as follows: The subjective symptoms were marked, and were described as a burning pain, always more intense on irritation, such as change of temperature, contact with acid, seasoned or salty food, or even mere pressure against the teeth or gums. Some of the patients described the pain as radiating toward the ear, others described an itching sensation. The pain varied in degree from mere discomfort to an intensity that made eating almost unbearable and interfered seriously with nutrition. In none of the cases was it demonstrated that the disorder interfered with sleep. It is always in the red, desquamated areas that the pain occurs, and when the epithelium is reformed over these areas they cease to be painful. Harris states that the similarity between the pain of Moeller's glossitis and that of a second-degree burn, from which the epidermis has been removed, is marked.

The disorder is to be distinguished from other conditions accompanied by pain. Lingual neuralgia is usually unilateral. The pain is lancinating and paroxysmal in character, and there is tenderness of the lingual nerve. From the cases purely neurotic in type, glossitis is distinguished by the presence of lesions, for in the former the mucosa of the tongue is apparently normal. It differs from the multiple benign plaques of the tongue by the absence in the latter of marked subjective symptoms.

The cause of the disorder is entirely unknown, al-

though in several cases intestinal parasites were associated. That it is obstinate to treatment is apparent from the fact that in only three of the twenty recorded cases did recovery occur. Various methods of treatment, including cauterization with lactic and chromic acids and silver nitrate, and astringent and antiseptic mouth-washes have all been futile. Improvement has been recorded in a few cases after anthelmintic treatment.

Harris concludes, first, that the type of glossitis described by Moeller is a distinct type of inflammation of the tongue; second, while undoubtedly uncommon, it is probably not so rare as the number of reported cases would lead one to judge; third, the association with intestinal parasites, as reported in the early cases, would seem to be purely accidental; fourth, the symptoms are so severe and the disease so intractable that the condition would seem to deserve more attention than it was received.

KERATOSIS.

Keratosis Pilaris of the Scalp. Two cases of this disorder are described by R. Sutton,⁹ occurring in a mother and her four-year-old daughter. In the case of the mother, there had been present for several months white, bead-like masses on the shafts of the hairs of the scalp. There were no subjective symptoms, but the masses bore a close resemblance to the ova of pediculi, and were therefore annoying to the patient. On the external surface of both the thighs and upper arms were numbers of small, hard, conical papules characteristic of keratosis pilaris. On several points on the scalp there were small, circumscribed, nutmeg-grater-like keratotic areas. The hypercornification was confined to the mouths of the hair follicles, and strung along at irregular intervals on many of the hairs were hard, oval masses of inspissated epithelial cells. The forcible removal of these masses would usually break the hair.

The microscopic examination showed merely the pic-

(9) Amer. Jour. Med. Sci., March, 1915.

ture of keratosis pilaris, with some atrophic changes in the follicle due to pressure. Cultural experiments were negative.

The cases are of interest on account of their resemblance to other diseases which produce nodes on the hair, among which are trichorrhexis nodosa, monilethrix, tinea nodosa, leptothrix, and pedra.

LUPUS.

Lupus Erythematosus of the Mucous Membranes. A recognition of lupus erythematosus on mucous membranes occurring coincidentally with the lesions on the glabrous skin is not difficult, but when limited to the mucosa much confusion arises. A report of eleven cases, showing lesions in seventeen locations on the mucous membranes, was made by G. D. Culver.¹ Of the eleven patients, nine were females, and they ranged in age from 16 to 67 years. All but one of the eleven had typical lesions on the glabrous skin. The locations of the lesions were as follows: Cheek pouches, five; gums, three; roof of mouth, one; lips, four; nose, two; and edges of lids, four.

The disorder has to be differentiated from lichen planus, leucoplakia, mucous patches of syphilis, and herpes.

The disorder is chronic and resistant to treatment. From a study of the lesions in the mouth, the author concludes that long-continued gastro-intestinal derangements may have an etiologic bearing on the disease.

Tumor-like Form of Lupus. Fischer² describes an interesting case of tumor-like lesions and elephantiasis of the left leg due to tuberculosis. The patient was a Russian, 22 years of age, from Odessa, who had been interned in Germany at the beginning of the war, and isolated on suspicion of leprosy.

At the age of 7, his knee had been operated on for a discharging sinus. The wound required a year for healing, which, even then, was imperfect. When 16 years

(1) Jour. Amer. Med. Ass'n., Aug. 28, 1915.

(2) Derm. Zeitschr., April, 1915.

old, the sinus again opened, and the swelling of the leg began. He found his way to America and was treated in Boston during a period of three months, after which he wandered to Germany.

The toes and plantar surface of the foot were practically free. Elsewhere, extending to the knee, the skin of the foot and leg was completely covered with tumor-like masses of blue to brownish-red color and of firm consistence.

Histologically, the epidermis was found to be hyperkeratotic, with marked prolongation of the papillae. Numerous tuberculous nodules, together with giant cells and tubercle bacilli were found.

TUBERCULIDES.

Tuberculides. The group of cutaneous eruptions now generally classed as tuberculides have been the subject of much study during recent years. It is well known that they have occurred in patients the subject of tuberculosis of some other part of the body. The question as to whether they were due to the presence of the bacillus in the situation of the lesion, or to toxins elaborated at a distance, has been difficult to solve. The generally accepted idea is that they are due to toxins elaborated at a distance.

These lesions as a rule consist of small nodules or papules, which undergo central necrosis and heal leaving a scar. An individual lesion usually runs its course in a comparatively short time. Many older disorders, described under the titles folliculitis, acnitis, acne scrofulosorum, and others, belong to this group. In only a few of the reported cases have tubercle bacilli been demonstrated in the lesions.

Some experimental work recently undertaken by Rist and Rolland and reviewed by Sequeira³ promises to throw much light on the question of the causation of these lesions. The experiments carried out consisted in the production of lesions in the skin of guinea-pigs by the inoculation of tubercle bacilli in animals that had

(3) Brit. Jour. Derm., October, 1915.

previously been infected with similar organisms. The re-inoculations were made at intervals of from one to four months after the initial subcutaneous or peritoneal tuberculization of the animals. In sixteen cases the phenomenon of Koch was observed. A specific example is as follows:

An animal was inoculated with fluid from a pleural effusion. A little more than three months later, an inoculation with human tubercle bacilli was made in the dermis of the abdominal wall. The following day there was diffuse inflammation at the site of the re-inoculation; on the third day there was marked infiltration, presenting a cartilaginous hardness. The surface was brown, and its margin was ecchymotic. Two days later, the brown area began to separate, and in three days more became detached, leaving an ulcer 0.5 cm. by 1 cm. in area, with raised edges. The base of the ulcer was formed by the muscular layer covered by a brownish slough. There was no corresponding glandular enlargement. In nine days the ulcer had filled up and rapidly healed, leaving a stellate cicatrix by the fifty-fifth day.

In contradistinction to this mode of development, a primary inoculation with Koch's bacilli develops more slowly, from nine to twelve days elapsing before symptoms are produced. These are exhibited as a nodule, which may be preceded by edema. The nodule enlarges, softens, and ulcerates, and at the end of a variable number of days a primary lesion, with adenopathy, is developed. This lesion presents a rounded or irregular loss of substance, with infiltrated, raised edges, resting on a deep induration, secreting a caseous pus or covered with crusts. There is at first unilateral glandular enlargement, later bilateral infection, and the lesions are incurable, the animal perishing in the course of two or three months.

"It is known that in re-inoculating subcutaneously a tuberculous guinea-pig the lesions appear the next day. There is no period of incubation of from eight to twelve days' duration, which is the rule in the primary inoculation. Moreover, instead of producing as in the primary inoculation, an incurable tuberculous chancre, which is

the cause of generalized infection, the second inoculation, provided the dose of bacilli injected is weak enough, produces a nodule which heals completely, with or without ulceration. There is at one and the same time a hypersensibility, which determines the immediate reaction, and an immunity which accelerates the cure; in other words, it is a condition of allergy."

The authors conclude that the cutaneous tuberculides are a manifestation of allergy in subjects in whom there is a manifest or latent focus of tuberculosis. The tuberculides are, therefore, spontaneous examples of Koch's phenomenon. The researches show that in an allergic subject a virulent exogenic reinoculation causes a lesion which heals, because the bacilli are destroyed *in situ*. The tuberculides are caused by an endogenous re-inoculation, and possess all the essential characters of the phenomenon of Koch, while in all respects similar to the lesions produced by a virulent exogenic re-inoculation.

In concluding his review, Sequeira quotes two cases coming under his observation supporting the conclusions above outlined.

CUTANEOUS DIPHThERIA.

Diphtheria of the Skin. This disorder has within the last few years been given more prominence than formerly, and several articles of importance have appeared regarding it. The number of cases of primary diphtheria of the skin is, however, few. Emge⁴ records such a case.

The patient was an interne in the hospital, and while intubating a small child was bitten on the knuckle of the left index finger. Two days later, the wound became tender and inflamed. On the following day, there was present a small ulcer, together with considerable hyperemia and infiltration about the knuckle. Hot, moist dressings were applied, and five days later a thin layer of grayish pus was present.

At this time the throat became sore, there was elevation of the body temperature, and the infiltration of the

(4) Jour. Amer. Med. Ass'n., Aug. 7, 1915.

finger became more active. On this and the two subsequent days, throat cultures exhibited streptococci only. Ten days after the injury, pus from the wound was found to contain diphtheria bacilli in culture, at which time the throat cultures were still negative. The epidermis of the finger separated from the underlying tissue over an area of 1 cm. in diameter, and revealed red granules, from which a small amount of thin, grayish pus exuded. On the eleventh day, 5,500 units of antitoxin were given, and on the day following this a few diphtheria organisms were recognized in the throat, when 10,000 units more of the antitoxin were administered. After two days, the temperature returned to normal, except for an evening rise, which persisted and was due to the presence of foci of tuberculosis in the lungs. Cultures from the finger became negative twenty-two days after the injury, but remained positive in the throat several days longer.

The local treatment of the finger consisted in the application of a 5 per cent. solution of phenol, after thoroughly washing with a 50 per cent. solution of alcohol. Later, when the wound began to heal, a 1 per cent. solution of yellow mercuric oxide was applied.

The author calls special attention to the fact that any abrasions of the skin in persons coming in close contact with patients suffering from diphtheria should receive immediate attention.

ANTHRAX.

Malignant Pustule. A clinical report of three cases of anthrax is made by Miles⁵ and some further notes on three other cases by Dowden.

In the first case, the lesion occurred on the side of the neck of a miner. The patient stated that a small pimple appeared on his neck in the morning and rapidly increased in size during the day until the whole neck and side of the face had become swollen. He felt ill; his pulse was rapid and feeble, and his temperature 103 F. The nodule was indurated, and covered by a dark brown

(5) Edinburgh Med. Jour., September, 1915.

crust, the latter being surrounded by a series of bluish vesicles. Microscopic examination of fluid from the vesicles and cultural experiments demonstrated anthrax bacilli.

The affected tissues were freely excised by elliptical incisions and the entire wound painted with pure phenol and packed with iodoform gauze. A prompt recovery occurred.

In the second case, the lesion also occurred on the neck. The patient, aged 52 years, was a van-man by occupation. Six days previous to the examination, a small pimple occurred on the side of the neck. The head of this was knocked off repeatedly by coming in contact with heavy loads carried on the shoulder. Three days previous to the examination, the whole neck became swollen, stiff, and painful. On examination, a black eschar the size of a threepenny piece was found on the left side of the neck, surrounded by a ring of small vesicles in a zone of hyperemia. The entire neck was edematous, brawny, and painful. The pulse was 104, the temperature 103 F., and the patient was ill. Cultures were made from the vesicles and from the blood. In the former a pure growth of *Bacillus anthracis* occurred; those from the blood were sterile.

The local lesion was freely excised by elliptical incisions. The wound was left open and dusted with ipecacuanha powder. The lesion healed without complications in about three weeks.

It was later found that this patient carried bags which had probably been contaminated from hides imported from Russia, and it was thought that the infection atrium was through the small pus-infected lesion which preceded the malignant pustule.

The third patient was a butcher, who developed a typical lesion on the arm shortly after dressing a bullock that had died suddenly of anthrax, the diagnosis being confirmed by microscopic and cultural observations. The local lesion was treated with antiseptics, and 40 c.c. of Sclavo's serum were injected subcutaneously into the abdominal wall. At a later date, a further injection of 20 c.c. of serum was given. Although the

patient suffered for several days, a complete recovery followed.

Dr. Dowden's first patient was infected from the same source as the one last mentioned. This patient was a shepherd, aged 32 years, and the disorder occurred on the side of the neck. The infection occurred through bleeding the bullock by which the previous patient was infected. The clinical appearance and microscopic findings were typical. The treatment consisted of curettage and the application of pure phenol, and complete recovery followed.

The other two cases were of a similar nature, one occurring on the forearm and the other on the hand. Excision, with the application of pure phenol, was employed, with recovery of the patient.

BLASTOMYCOSIS.

Very little attention has been paid in the literature during the past ten years to cutaneous blastomycosis. A number of reports have, however, been made on generalized systemic blastomycosis. As the major number of case reports have come from Chicago and vicinity, it is interesting to note a report of two typical cutaneous cases from Denver by Jackson.⁶ One occurred in a male patient, aged 68, in whom active or healed lesions were present on the forehead, eyelids, nose, and cheeks. The clinical appearance was typical of the disorder. The other patient was a woman, aged 39, in whom lesions occurred on both lids of one eye.

Oidiomycosis in Porto Rico. Under this title Hildreth and R. Sutton⁷ record the case of a patient suffering with a generalized or systemic infection with blastomycetes. The case history is very similar to those of the cases occurring in and about Chicago, but apparently was only of moderate severity.

The patient, a man aged 40, is described as having had attacks of pain in the chest lasting for two or three months, during the past two or three years, accompanied

(6) Jour. Amer. Med. Ass'n., July 3, 1915.

(7) Jour. Amer. Med. Ass'n., Dec. 26, 1914.

by cough, with a slight amount of tenacious phlegm. The physical examination showed only a few signs in the chest, and the sputum was not examined.

The cutaneous lesions consisted of nodules. The first appeared on the outer part of the left leg, 4 inches below the knee. A month later, two more appeared, one on the front of each thigh, about three inches above the knee. Two weeks later, two more appeared, one on each leg, three inches above those last mentioned. They all commenced as small, hard nodules under the skin, which steadily increased in size until attaining the diameter of an inch, when they softened in the center. The skin over the lesion was of a deep-purple color.

Fresh pus removed showed the usual deeply contoured, oval and spherical bodies, with frequent budding. They varied in size from 10 to 15 microns in diameter, as a rule. In addition, there were many smaller spherical bodies, about 3 microns in diameter.

The treatment consisted of incision and drainage, and the local application of ichthyol in ointment form, and potassium iodide internally in increasing doses. A month and a half after the first visit of the patient, improvement had been so great that he seemed fully recovered.

GUINEA-WORM DISEASE.

Guinea-Worm Disease. An interesting case of this disorder has been noted by Davis and Hilton,⁸ occurring in a soldier in France. The patient had been in the military service for seven and one-half years, five of which had been spent in India. From October, 1914, he had been at the front in France. Six weeks before the present examination, the patient had injured the left foot below the internal malleolus and the right foot on the dorsal surface with a barbed wire, while in swimming. The wounds were painted with tincture of iodine and almost completely healed in two weeks. At the end of the third week, the left foot became tender, swollen, and finally suppurated. The inguinal glands on that

(8) Jour. Amer. Med. Ass'n., Oct. 2, 1915.

side also became swollen and painful. The wound was opened and wet dressings applied, after which it partially healed. In seven days the foot again became swollen and tender.

Coincident with the primary injury, the patient noticed a white, raised area on the flexor surface of the left forearm. This was surmounted by a vesicle, which was broken, and a worm 2 feet in length was wound out on a lead pencil. At the time of the examination, this area showed a small pigmented scar.

On the left foot, below the internal malleolus, there was a large, infected, irregularly shaped ulcer, having ragged and necrotic edges, extending from which were several sinuses, which exuded pus and a sanguino-purulent material. The ulcer was of the size of a 25-cent piece, and consisted of unhealthy, uneven granulations. The surrounding area was tender. The inguinal glands on this side were also enlarged and painful. Under anesthesia, the lesion was opened and some necrotic tissue and two or more worms were removed. One, which was removed *in toto*, measured 32 cm. in length by 3 mm. in circumference. Many pieces were removed in addition to this, but there was doubt as to the number of worms.

As the patient had recently returned from India, it was supposed that the infection had occurred there. The part the injury played in localizing the worm was not understood.

The guinea-worm enters the body through the stomach, and is commonly taken into the system with contaminated water.

TROMBIDIOSIS.

Trombidiosis. Under this title, G. M. Olson⁹ discusses the cutaneous lesions which occur following attacks by the red jigger. He states that *Trombidium irritans* is the cause of the disorder in Minnesota. It is found mainly on the grass and bushes near the numerous lakes and streams in that state, especially where the soil is sandy.

(9) Jour. Amer. Med. Ass'n, June 19, 1915.

In Minneapolis, the red jiggers are found on the sandy beaches at Lake Calhoun and also at Lake Minnetonka.

The disorder occurs only in July, August, and September, and is accompanied by severe itching, with an urticarial eruption on the arms, legs, or trunk. On close examination, the bright orange-red mite can be made out, often in the center of an urticarial papule. When *Trombidium irritans* finds a proper host, it pierces the skin and burrows in until entirely concealed, and here it remains until it dies, in the course of about a week. One or two hours after the beginning of the attack, itching occurs. The author records a case in which over forty such lesions were pointed out by the patient. After ten or twelve hours, the parasite is completely buried in the skin. Several types of lesions are produced, including erythematous, urticarial, papular, pustular, and eczematous, and the itching may be intense. In certain cases, some elevation of temperature is noted, the reaction of different patients depending on the individual resistance.

The writer summarizes as follows:

1. Trombidiosis or *Trombidiasis cutis* is a condition of the skin due to the attacks of the red jigger, and occurs commonly in Minnesota and probably in nearly all the states of the Union.
2. The disorder occurs only in July, August, and the early part of September.
3. Removal of the jiggers by means of a needle and the application of tincture of iodine is the most effective method of treatment.

LARVA MIGRANS.

Larva Migrans. This rare disease has been described recently in a few instances as it occurred in the south, by Haase and by Grossman. One of these southern cases was seen in Chicago, while the patient was here undergoing treatment for another disorder. Kirby-Smith¹ states that in four years he has seen thirty cases of the

(1) New York Med. Jour., March 13, 1915.

disorder, and reports in detail a very extensive case which occurred in a man 43 years of age.

At the time of the examination, in the case reported, the disorder had been present three weeks. The first lesion appeared on the back, and appeared during the night. After three days, there were a number of separate furrows. Some of these extended to the thigh, and others forward to the abdomen and groin, while still others extended up to the shoulder and down the arm. There was also an active lesion on the hand.

The subjective symptom was marked itching. The author says that the first lesion induced is a raised, erythematous line, elevated one-eighth to one-twelfth of an inch above the level of the skin and having a tortuous, irregular course, and that the furrow rapidly fills with serum, which in the course of a few days becomes sero-pustular. The lesion later becomes crusted, either by rupture through scratching or by the drying up of the secretion, new lesions usually beginning within an inch or two of the older ones.

The treatment that has given the author uniformly good results has been by cutting the skin over the furrows with a bistoury, then applying equal parts of tincture of iodine and phenol.

MYCETOMA PEDIS.

Mycetoma Pedis. This is a disorder which is quite common in tropical climates, but very rare in other situations. In America, only a few cases have been reported. One of the early and classical examples to occur here was reported by the late Dr. James Nevins Hyde, and in the last few years two other cases have been recorded by Sutton.

Recently, a patient suffering with this disorder was reported by Semon.² The patient, who was exhibited before the dermatological section of the Royal Society of Medicine,³ in London, in May, 1915, was a Sepoy, aged 26 years, born in India, where mycetoma pedis is

(2) Brit. Jour. Derm., August, 1915.

(3) Brit. Jour. Derm., May 15, 1915, p. 240.

not uncommon. In January of this year, a heavy ammunition box fell on his right foot from a short height. Six weeks later, he reported at the base hospital in Boulogne for a swelling which had been present since the foot was injured as above noted. Amputation was suggested, but the patient refused and was kept in the hospital for further observation and treatment. It is stated that there is little doubt that the disease was contracted in India before the patient left for the front in October, 1914, and that the accidental injury was merely coincident with the primary clinical manifestation. Two months after the injury itching occurred in the area, and later a discharge developed.

At the time of his presentation, there was an extensive area of darkened skin over the dorsal and tibial aspects of the swollen right foot, situated in which were soft protruberant masses of dusky-purple granulation. These exuded clear fluid, and sometimes pus from sinuses which had not yet been proved to extend as deep as the tarsus. In the discharge were present almost invariably the minute black granules which, both microscopically and culturally, belong to a generic type of fungus known as *Mycetoma*. On the tibial and plantar aspects there were a few small dark points, which occasionally broke down and discharged a similar fluid. There was a progressive tendency for the arch of the foot to become obliterated, and there was increasing difficulty in walking.

Cultures were made on several media, including agar-agar, maltose agar, and Raulin's liquid medium. In the latter a very profuse growth occurred.

In view of the good results obtained from the use of *Tricophyton* injections in cases of deep ringworm, injections of the filtrate from cultures of the sclerotica in this case were tried. No particular reaction or change followed these injections. Potassium iodide was also given, but produced pronounced reaction, indicated by rise in temperature, increase in the local discharge, and increased protruberance of the granules, redness and heat in the surrounding skin, and, subjectively, considerable throbbing and pain. All of these manifestations

ceased when the drug was withheld, but recurred on its resumption. Radiotherapy, also, had little effect, other than controlling the exuberance of the granules for a time. In view of the failure of other methods of treatment and the patient's refusal to submit to amputation, ionization with a 7 per cent. potassium iodide and a 2 per cent. sulphate of zinc alternately was being experimentally tried at the time of writing.

RINGWORM.

Complement-Fixation Tests in Ringworm and Favus. Kolmer and Strickler⁴ make an important contribution on the value of complement-fixation tests in ringworm and favus, which places vaccine treatment of these disorders on a scientific basis. The following is a complete copy of the work, with tables omitted:

"In a fairly minute examination of the literature on fungus diseases of the skin, we have found no reference to complement-fixation tests having been made.

"This study was undertaken by us in conjunction with investigations on the subject of vaccine treatment of ringworm and favus, to determine if various pathogenic fungi stimulate the production of amboceptors, as possibly shedding more light on the mechanism of the immune processes operative in these infections.

"We have found that, in the majority of cases of ringworm of the scalp and favus, complement-fixation occurs with fungus antigens, and while this test may have a limited practical value, owing to the ease with which the diagnosis of these diseases may be made from the clinical aspects, supplemented by a microscopic examination of diseased hairs, in the diagnosis of doubtful cases the complement-fixation test may prove of value.

"Since ringworm of the scalp is to be regarded as a superficial invasion of the tissues of the scalp, the invasion of the fungus usually being limited to the shafts of hairs and the neighboring cells of hair follicles, it is of added interest that antibodies, which may be demonstrated in the serum of a person with this disease by

(4) Jour. Amer. Med. Ass'n., March 6, 1915.

the complement-fixation technique, may be produced by mere parasitic invasion without true infection, if the latter term is restricted to a process characterized by the passage of a micro-parasite through the barrier epithelium to the tissues beneath. It is conceivable that the fungus of ringworm may produce soluble products which, being absorbed, are capable of stimulating the local and general body cells to produce antibodies.

"Favus, on the other hand, is usually characterized by a well-marked invasion of all layers of the epiderm down to and not infrequently involving the underlying corium, so that in most instances the disease may be regarded as an infection in the true sense of the term.

"Of interest in this connection is the demonstration by Plato, Truffi, Black and Massini of local and general allergic reactions in persons suffering with ringworm by the application or injection of 'trichophytin,' an extract prepared of cultures of the fungus indicating the presence of a lytic antibody in the body fluids of persons suffering with this disease.

"Further interest in this subject refers to the possible inter-relationship of the fungi of ringworm and favus as studied by a complement-fixation technique. Bodin has described cases in which lesions on the skin, similar to those produced by the trichophyton of ringworm, have been caused by a parasite of the nature of an achorion. Fox, Blaxall and Sabouraud have observed circinate lesions on the skin, and lesions like kerion on the scalp, similar to those produced by the trichophyta, which, on cultivation, gave a culture like that of favus. Such cases demonstrate the fact that the line of demarcation between the fungi of ringworm and favus is not well defined.

"**MATERIALS:** *Serums.* The serums of twenty-seven cases of ringworm of the scalp were studied; also the serums of three cases of favus, and one of tinea versicolor. Most of these patients were in the services of Dr. Jay F. Schamberg in the Polyclinic and Philadelphia General Hospitals.

"In addition, the serum of rabbits immunized with repeated intravenous injections of the antigens of ring-

worm and favus fungi were employed in the study of the biologic relationship of these fungi.

"*Cultures.* Pure cultures of the ringworm and favus fungi were obtained by culturing diseased hairs in 'French proof agar.' In obtaining these cultures, diseased hairs were placed in a shallow dish of absolute alcohol for 15 or 20 minutes, washed in sterile salt solution, and planted at once on a layer of the medium contained in 250 c.c. wide-mouthed Erlenmeyer flasks. These were placed at room temperature for twenty-four days, and the colony studied. Usually the fungi could be obtained in pure culture, fulfilling the cultural and microscopic appearances of *Microsporon audouini* and the achorion of Schönlein, respectively.

"For cultivating the fungus of ringworm a maltose medium was employed:

Maltose	38 gm.
Agar-agar	13 gm.
Peptone	5 gm.
Distilled water	1,000 c.c.

"For the achorion of Schönlein (favus), the following medium of Sabouraud was successfully employed:

Pure anhydrous glucose	40 gm.
Peptone	20 gm.
Agar-agar	15 gm.
Distilled water	1,000 c.c.

"While cultures were not made of all our cases of ringworm, all of those obtained were identified as *Microsporon audouini*.

"While many attempts have been made to cultivate *Microsporon furfur*, the fungus of tinea versicolor, these have generally failed. One of us has succeeded in cultivating a fungus from the scales of epithelium from a patient with this disease which we regard as a doubtful culture of the fungus. It was used in this study in our endeavor to throw more light on its identity.

"*Antigens.* These were prepared as follows:

"Twenty-four day cultures were carefully removed from the flasks of medium with due caution against tear-

ing away portions of the medium. As the cultures are firmly adherent, this is difficult and practically impossible to avoid entirely. An entire colony was placed in a sterile mortar, and 4.25 gm. of crystals of pure sodium chloride added. By prolonged trituration the mycelia were broken up and the homogeneous material obtained. To this were added 500 c.c. of sterile distilled water. The resulting emulsion was then isotonic, and after being shaken mechanically with glass beads was heated at 60 C. (140 F.) for an hour, preserved with 0.25 per cent. phenol (carbolic acid), and used as antigen. Large flakes from the emulsion will settle to the bottom of the flask, and these may be discarded after pipetting off the supernatant emulsion. Under no circumstances, however, may the emulsion be filtered through paper or porcelain, as these hold back the particles of mycelia, yielding a filtrate poor in antigenic properties. The ringworm antigen employed was prepared of three different cultures of *Microsporon audouinii*.

"TECHNIQUE; A. *Hemolytic System*. The antisheep hemolytic system was used throughout in the same amounts as in our Wassermann technique, namely, one-half the amounts used in the original Wassermann method. Washed sheep's corpuscles were made up in a 2.5 per cent. suspension and used in doses of 1 c.c.; the fresh serums of guinea-pigs were diluted 1:20 and used as complement in dose of 1 c.c.; the hemolysin was titrated each day, and two hemolytic units used.

"All serums were heated to 55 C. (131 F.) for one-half hour, and used in amounts of from 0.001 to 0.2 c.c. Serum, antigen, and complement were incubated for one hour at 37 C. (98.6 F.), and hemolysin and corpuscles added, incubated for an hour or longer, depending on the hemolysis of the controls, and the readings made.

"By titration of the hemolysin with each complement and corpuscle suspension to be used that day, the hemolytic system is accurately adjusted. The controls were the same as we used in the routine Wassermann reaction; a serum control with each serum in maximum

dosage; antigen, complement, hemolytic and corpuscle controls.

"B. *Antigen Titrations.* The anticomplementary dose of each antigen was determined by titration at frequent intervals, and one-quarter of the anticomplementary dose used as our antigenic dose. With these amounts, false reactions were avoided. The antigens were always preserved in a refrigerator, and their titer remained remarkably constant over periods of several months.

"Complement Fixation in Ringworm of the Scalp: With the serums of twenty-three cases of tinea tonsurans, positive reactions were obtained with the polyvalent antigen of *Microsporon audouini* in eighteen, or 78 per cent. Not all of these cases were cultured to determine whether the fungus was *Microsporon audouini* or *Trichophyta endothrix* or *ectothrix*.

"*Specificity of Complement-Fixation in Ringworm and Favus:* Most interest in this connection refers to the possibility of the serums of syphilitic persons reacting with the fungus antigens. We have tested a number of the serums from persons with various diseases, including syphilis, and have found that they have in no instance reacted positively with the fungus antigens.

"Each serum was also tested by the Wassermann reaction, three different extracts, as follows, being used: a cholesterinized extract of human heart, an alcoholic extract of syphilitic liver, and an extract of acetone-insoluble lipoids of beef heart.

"These results may be summarized as follows:

"1. Eleven serums yielding positive Wassermann reactions reacted negatively in each instance with the antigens of the three fungi. These results indicate quite clearly that the lipophilic reagin in the blood serum of syphilitics responsible for the Wassermann reaction will not absorb complement with the fungi antigens.

"2. With the serums of persons suffering with various other diseases, including four skin diseases, namely, scabies, impetigo contagiosa, eczema, and acne vulgaris, the reactions with the antigens of fungi were entirely negative.

"3. These results indicate that while the reactions are not highly specific with the two fungus diseases, namely, ringworm of the scalp and favus, owing probably to a biologic relationship of these fungi, complement fixation does not occur with these antigens of fungi and the serums of various other diseases.

"Summary: 1. With a polyvalent antigen of *Microsporon audouini*, complement-fixation was found to occur in 78 per cent. of persons suffering with ringworm of the scalp.

"2. The serums of two cases of favus studied yielded positive reactions with an antigen of the achorion of Schönlein.

"3. The degree of reaction in both ringworm and favus was observed to depend in general, first, on the severity of the infection, and, second, on the duration of the infection.

"4. A culture of the scales of tinea versicolor, regarded as a doubtful culture of *Microsporon furfur*, reacted weakly or irregularly with the serums of ringworm and favus patients, and negatively with the serum of a case of tinea versicolor.

"5. The ringworm and favus antibodies (amboceptors) fixed complement best with their respective antigens, but with relatively large doses of serum this specificity was not observed, owing probably to a biologic relationship of *Microsporon audouini* and *Achorion schönleini*.

"6. The antigens of the fungi did not fix complement with the serums of syphilitics and that of persons suffering from scabies, impetigo contagiosa, eczema, acne vulgaris, and other diseases."

Ringworm of the Scalp. In view of the intractable nature of the disorder, any therapeutic measure of promise is well worth our attention. In the ordinary form which occurs in children, and which in the major number of cases in this country is due to *Microsporon audouini*, treatment must be long continued to be effective. The Roentgen method at present is the ideal method, but requires a high degree of technical skill, and is therefore limited in its usefulness. The great saving

to the state was well proven by Sabouraud long since by this method, but its general use is not yet a possibility.

Strickler⁵ makes an interesting and instructive report of the treatment with vaccine. The following is a rather complete abstract of the work:

"The vaccine treatment of ringworm of the scalp rests on the fundamental fact that, in the blood of children suffering from this affection, there is a specific antibody which produces a positive complement-fixation test and gives a positive skin reaction.

"Dr. Kolmer and I found 78 per cent. positive fixation tests in children suffering from tinea tonsurans. This work was done with controls, not only against various dermatologic affections, but also against syphilis, all of which controls were negative. In performing this reaction, the ringworm fungus was used as the antigen. We inject 0.05 c.c. of a suspension of dead ringworm fungus in salt solution, which has been briefly centrifuged at low speed, so that it is of about the same density as luetin. When we inject it into the superficial skin layer of the arms of children suffering from tinea tonsurans, we obtain reactions in the vast majority of patients with ringworm, and negative results in our controls. In only one instance did we obtain a slight positive result in a case of severe staphylococcus infection. The reaction occurs about 24 hours after injection, and a positive result consists in a central nodular area of infiltration and a surrounding reddened areola.

"Having demonstrated these two fundamental phenomena, namely, the positive complement-fixation test and the occurrence of a skin reaction in ringworm of the scalp, it is felt that we have evidence beyond peradventure of a doubt that the ringworm fungus elaborates a specific substance which gets into the circulating blood of patients suffering from tinea tonsurans. The fact that there is a specific substance in the serum of these patients indicates the rationale and value of a vaccine treatment of ringworm of the scalp."

(5) Jour. Amer. Med. Ass'n., July 17, 1915.

After considerable experimentation, the author employed the following technique in preparing the vaccine:

Infected hairs were soaked in absolute alcohol for from fifteen to twenty-five minutes, then immersed in sterile salt solution, and transplanted by sterile forceps to "French proof agar" medium contained in Erlenmeyer flasks. All the steps in the procedure were carried out under the usual laboratory technique. The cotton stoppers of the flasks were paraffined, and the flasks placed on top of the incubator and allowed to grow for twenty-four days. The growth was then removed with a sterilized platinum spade, care being taken to remove as little of the culture medium as possible, and treated for from 10 to 15 minutes with crystals of chemically pure sodium chloride. To this enough sterilized distilled water was added to make a normal saline solution.

"From the growth on an ordinary Erlenmeyer flask, about 500 c.c. of vaccine was made up. To this from 8 to 10 c.c. of chloroform was added to kill the growth, and the vaccine heated for one hour at 60 C. The use of the chloroform was latterly discontinued.

"Controls for living fungi were made on 'French proof agar,' and for pyogenic organisms on plain agar. The vaccine was preserved by the addition of sufficient phenol to bring it up to 0.25 per cent. It was then tubed in sterile vials, and was ready for use."

"The vaccine may be employed in doses of from 0.5 up to 4 c.c. It has been found of no value to employ so large a dose as the latter, the usual dose varying between 0.5 and 2 c.c. The injections were at first given at intervals of three days, but after a more prolonged experience it was deemed advisable to give them every five or six days. The region between the scapulae, where there is considerable loose tissue, and the buttock were the areas chosen for injection, preference being given to the former. About thirty-six hours after injection, but only after the patient has had six or seven injections, an infiltrated area develops at times at the point of injection. The infiltration may be made to disappear by discontinuing treatment and painting the

area with tincture of iodine and applying a dressing of ichthyol ointment once daily.

"In no instance were there any constitutional reactions following the injection.

"The number of injections varied from seven in some instances to twenty-two in others. No patient was considered cured until the hair from the area treated and the vicinity had been examined microscopically and found to be devoid of fungus. In a majority of instances, the hair was also submitted to Dr. J. F. Schamberg and to Dr. Kolmer, who subsequently examined it and confirmed the absence of the ringworm parasite.

"The vaccine may affect the infected hair in one of two ways: First, each hair may be the seat of a follicular abscess, and thus lead to the extrusion of the hair; or, second, there may develop a crust over an area, as result of an inflammation beneath, and with the falling off of the crust the infected hair also goes with it. While the stock vaccine suffices in the vast majority of instances, in a very limited number an autogenous vaccine becomes necessary.

"In treating a case of ringworm of the scalp, we adopt the following procedure: Hair infected with the fungus is planted on 'French proof agar,' according to the technique previously described, both for the purpose of determining the type of infection and for the purpose of treatment.

"We then inject the patient with our stock vaccine once every five days, giving five injections, starting the first injection with 0.5 c.c. and giving 1 c.c. for the second and third doses and 2 c.c. for the fourth and fifth injections. We then advise the use of local treatment in conjunction with the vaccine. We suggest oil of cade and olive oil, equal parts, to be used twice a day for a period of two weeks, meanwhile giving 1.5 c.c. of the vaccine every six days. This local treatment is then to be followed by the use of an ointment, say, 20 grains of precipitated sulphur and 1 ounce of petrolatum, which may be applied once a day for a period of two weeks. Treatment by vaccine extending over a period of between three and four months usually suffices for a

cure. If after seven or eight injections no improvement is noticed, the stock vaccine should be discontinued and an autogenous one employed.

"Up to date, at the Philadelphia General Hospital we have treated twenty patients with ringworm of the scalp of various grades of severity, with the following results: Cured, fourteen; markedly improved and still under treatment, one; improved and still under treatment, one; improved, but left before treatment could be completely carried out, three; died from measles with an intercurrent pneumonia, one.

"All of these patients were treated with vaccine only, a weak ointment being used to stimulate hair growth in three cases, but only after repeated examinations proved the hair to be devoid of fungus."

Ringworm of the Scalp in Chicago. In view of the fact that many species of fungi produce different varieties of ringworm, and also that various species apparently select different parts of the world for their growth, it was thought that a study of the fungi as found in Chicago would be of interest. This work has been carried out in most of the large cities of the world, and has shown a great difference in the number of the particular types of cases in the various cities. For instance, in London, *Microsporon audouini* produces the major number of scalp ringworms; while in Paris the percentage of this variety is much smaller, and on the continent of Europe this particular fungus is found but rarely. The study in Chicago was undertaken by Beeson,⁶ with the following results:

Out of 100 cases studied, 89 per cent. were found to belong to the *Microsporon* group, while 11 per cent. belonged to the *Megalosporon* group. Of the latter, *Endothrix* was found in 7 per cent. and *Ectothrix* in 4 per cent.

This corresponds closely with other American observations, and is very close to that found in London. Sabouraud's series, on the other hand, showed *Microsporon* 40 per cent., *Megalosporon* 60 per cent. Of the

(6) Jour. Cut. Dis., November, 1915.

latter, 58 per cent. were *Endothrix* and 2 per cent. *Ectothrix*.

The particular families to which these various fungi belong was also worked out by the author, and the report is of value to one interested in the scientific side of ringworm.

LEPROSY.

Historical Review of Leprosy. Montgomery⁷ gives an excellent historical review of the disease from Biblical times through the Crusades and up to the present moment, and concludes with some remarks on the attitude toward leprosy in modern life. He believes that much of the superstitious fear of people so afflicted was due to the great disfigurement occurring about the faces of these patients. As the distortion in some cases becomes marked, the author believes that in superstitious communities imbued with mysticism, such as were the European countries of the middle-ages, it is no wonder that the victims of leprosy were regarded with the greatest horror. He further states that lepers are particularly thankless for any attention shown them, and are stupidly indifferent to the horror they excite. He believes that the great fear of the contagiousness of leprosy existing in the mind of the public in general is due to an erroneous interpretation of certain passages of the Old Testament and the natural repulsion toward the disease; and further, that the Biblical view of the highly contagious nature of the disorder undoubtedly aided in stamping out the epidemics of the middle ages, but that in modern life it works an unnecessary hardship on the afflicted and should give place to a more reasonable attitude, agreeing with the real facts in the case.

Symptoms and Diagnosis of Leprosy. Morrow and Lee⁸ report thirteen cases of leprosy under their observation in the Isolation Hospital at San Francisco. It is interesting to note that of these patients six were China-

(7) Jour. Amer. Med. Ass'n., Sept. 11, 1915.

(8) Jour. Amer. Med. Ass'n., Sept. 11, 1915, p. 931.

men ; three were Greeks ; one a colored man who had been some time in the Philippines ; two were from Honolulu, and one was a Mexican. The nationality of these patients throws much light on the type of individual attacked. Of the entire group, only one American-born person was attacked, and that individual, a colored man, had been in the Philippines, a country in which the disease is endemic. This group of patients had been in the Isolation Hospital in San Francisco from a few to twenty-five years and presented all the various clinical manifestations of the disease.

The reporters outline the clinical features and diagnosis of the disease, laying particular stress on the affection as it attacks the eye. For immediate microscopic diagnosis they suggest the incision of a nodule with a cataract knife and removal of a small amount of material from the opening thus made with a curette. This material is then smeared over a slide stained with the Ziehl-Neelsen method. They state that the complement-fixation test of Wassermann frequently gives a positive reaction in the nodular variety, and that when leprosy antigen is used it is practically always positive in this variety. In the anesthetic type, the complement-fixation test is usually negative, and when positive is commonly only mildly so. The luetin reaction is always negative.

Etiology and Treatment of Leprosy. Chipman⁹ states that while the lepra bacillus of Hansen is generally conceded to be the specific cause of the disease, its route of entry is unknown, and many important questions concerning contagion remain unsettled. The theory of direct hereditary transmission is practically disproved. The theory that the disease is caused by the eating of decayed fish apparently has few adherents ; and that the disease is spread by direct inoculation seems improbable from the uniformly negative results in numerous human and animal experiments. As to the rôle of insects as carriers, the mosquito seems to be the least likely agent of the carriers studied. Flies, bedbugs, and fleas present more possibilities.

(9) Jour. Amer. Med. Ass'n, Sept. 11, 1915, p. 984.

Chipman summarizes the findings as follows:

1. Leprosy is caused by the lepra bacillus, though it does not fulfill the postulates of Koch.
2. The disease is not hereditary.
3. The ability of the leper to transmit the disease differs according to the various phases of the disease.
4. The receptivity of an exposed subject varies with divers physiological circumstances.
5. The rôle of insects as intermediaries is as yet unproved, though certain of them must be regarded with suspicion.
6. The disease is most readily propagated where dirt prevails.

In discussing the treatment, the writer states that there are two aims in treatment: first, the prophylactic, and, second, the relief of symptoms. Prophylaxis should be considered in relation to the individual and the community. From the individual standpoint, personal cleanliness and a condition of such good health that resistance in general is high would seem the best safeguards. From the community point of view, in addition to the maintenance of proper standards of sanitation, there arises the question of segregation. In those countries in which segregation has been enforced, the numbers of lepers has steadily decreased. Precautions should be observed in keeping lepers' quarters well screened, as well as in the adoption of any measure designed to keep them free from any insects under suspicion of acting as carriers.

Among the various remedies discussed in the treatment of the disease itself are lepra serum, vaccines, tuberculin, Coley's fluid, leprolin, nastin, salvarsan, snake venom, and antivenomous serum, all of which have given varying results. Radiotherapy has influenced individual nodules favorably, but it has been thought that while doing this it aided in the dissemination of the process and its use is not recommended. The one remedy which is of value is chaulmoogra oil. The combination suggested is that employed by Heiser, which is as follows: chaulmoogra oil, 60 c.c.; camphorated oil, 60 c.c.; resorcin, 4 grams.

Local Treatment: Early radical removal of lesions, followed by cauterization, may arrest the disease. At a later date, surgical procedure is advised as demanded by the individual case.

Chipman recapitulates the treatment as follows: Individual prophylaxis, which includes correct hygiene and close surveillance of possible insect-carriers; and community prophylaxis, which demands segregation. Medicinal treatment is altogether empiric, though the future possibly holds some specific in store. At times, cure is spontaneous. At present, the chaulmoogra oil and resorcin combination given subcutaneously promises best results. Climate, food, and good hygienic conditions influence all cases favorably. The importance of hot baths should not be overlooked; several baths daily are of undoubted value.

Danger of German Troops Contracting Leprosy in Russia. Blaschko^s is much concerned about the possibility of German soldiers returning from Russia with leprosy and of distributing the disease broadcast throughout the empire.

Prissmann and others have estimated the number of lepers in and about Courland at 1,000. Although the mode of transmission of the disease remains unknown its contagiousness, he says, can not be doubted. It is true that men may be in daily contact with lepers for years without becoming infected; nevertheless, others may become infected during merely a chance meeting. It is conceivable, therefore, that many soldiers may return home harboring the disease, and, since it is so slow and insidious in onset, years may elapse before it is recognized. Meanwhile, other members of the family may develop the malady.

He recommends that the military physicians determine the location of every leper and isolate him, and that no soldier be quartered in leper houses. All parasites in the clothing should be destroyed, inasmuch as the rôle they play in transmission of the disease is not known.

SPOROTRICHOSIS.

Sporotrichosis. In view of the possibility of man being infected with this disorder, directly or indirectly, from the lower animals, particularly the horse, a possibility suggested by Hyde and Davis in 1910, the following study of the disease in man and animals is of interest:

Meyer⁹ states that spontaneous sporotrichosis in animals has been known to exist in the United States since 1909, and that such cases have been noted in Pennsylvania, North Dakota, Montana, Iowa, Ohio, Kansas, and Missouri. In his opinion, the disease among the horses in North Dakota, with which Hyde and Davis associated their human infection, was farcy, and not sporotrichosis.

In this study, out of 400 cases of human sporotrichosis described in the international literature, only one or two can be connected with cases of equine sporotrichosis. From the analytical study given, the theory is not supported that sporotrichosis is very frequently transmitted from horses to man. The author himself suffered an accidental infection from cultures of animal origin. The other case reported is outlined in this article.

The author concludes that spontaneous sporotrichosis of domesticated animals, particularly of horses, is very common in certain parts of the United States. Extensive bacteriologic-serologic experiments have proved the identity of the causative organisms in human and animal sporotrichosis. The pathogenicity for human beings was observed in accidental laboratory infection.

In Pennsylvania, equine sporotrichosis has been noted in as many as 150 cases annually; only two human cases are on record in that state. The evidence quoted does not support the theory that human sporotrichosis is very frequently transmitted from horses to man in the United States. The absence of sporotrichosis among veterinarians and farmers in Pennsylvania, where equine sporotrichosis is so exceedingly common and so often treated, calling forth undoubtedly close contact with infectious material, demonstrates that sporotrichosis infections in

(9) Jour. Amer. Med. Ass'n., Aug. 14, 1915.

man are established by this channel of contact in rare instances only.

ALOPECIA.

Congenital, Familial Alopecia Due to Hypothyroidism. Petersen¹ saw a father, 47 years old, and three sons, aged, 12, 11 and 6 years, respectively, who had marked alopecia. The lanugo hair and the cilia were not involved, except that they were lacking in pigment. There was no evidence of cretinism, but the thyroid glands were palpable. The three children were treated during a period of 8 months with thyroid extract, with good results.

Hyperpigmentation of Hair Following Alopecia Areata. Typical alopecia areata is usually followed by the appearance of lanugo hairs, which in turn are succeeded by normal hairs. The lanugo hairs, however, may not precede the permanent hairs, and the latter may be lacking in pigment, so that each area is covered with a snow-white growth of hair.

Kuznitzky² reports the case of a young man, 18 years of age, who had been treated for alopecia areata for more than a year with ultra-violet rays. The epilated areas eventually became covered with depigmented lanugo hairs, which were finally replaced by hyperpigmented hairs. These first appeared at the margins and gradually filled in the centers. If epilation of these hairs were carried well within the normal area, the new growth was found to be normal, leading to the conclusion that the hyperpigmentation was a change limited to the hairs.

TISSUE STAIN.

Connective-Tissue Stain. The three best-known stains are those of Van Gieson, Unna, and Mallory. No one of these, however, is sufficiently elective to allow of a demonstration of all of the finest fibers.

(1) Derm. Zeitschr., April, 1915.

(2) Berliner klin. Wochenschr., March 1, 1915.

Herxheimer³ describes a new method, which, he says, will stain all the fibers, normal and pathologic, wherever found.

The tissue is fixed for 24 hours in Lugol's solution, then placed for 30 minutes in 70 per cent., 90 per cent., and absolute alcohol successively, then transferred to xylene or chloroform and imbedded in paraffin. The sections are placed for two minutes in 10 per cent. phospho-molybdic acid and then stained with Mallory's hematoxylin from 5 to 15 minutes, after which they are placed in the usual succession of water and alcohol in increasing concentrations, and finally mounted in balsam.

(3) Arch. Derm. Syph., June, 1915.

TREATMENT OF DERMATOSES.

Tar for Chronic Eczema. Thedering¹ says that the method of choice for the treatment of eczema, especially of the deep, infiltrated type, is roentgenotherapy. When, however, the Roentgen rays are not available, tar should be used. This acts merely as a mild skin irritant, and not as a specific for the disorder. In some cases, a superficial dermatitis results, which, after healing, may leave the eczema unchanged. The art in the use of this method consists in obtaining the minimum of irritation and the maximum of penetration.

As is well known, there are some skins which are hypersensitive to tar, and this hypersensitiveness can be increased by the simultaneous use of soap. All varieties of eczema, with the exception of the seborrhoeic, are irritated by water; but most irritable of all is eczema that has been treated with tar. The use of soap tends to produce a nodular, vesico-pustular type, which may complicate the healing very seriously.

Thedering paints the lesion morning and evening for four days with coal tar. During the next three days he rubs in a 2 per cent. salicylic-acid ointment. On the eighth day the lesion is washed free of tar with soft soap; after which, if necessary, the cycle may be repeated.

It is surprising how free from irritation the lesion will remain during this treatment; even the subacute cases withstand it easily.

All cases, it must be admitted, do not yield to this method of treatment. The chronic lichenoid eczema, and particularly the verrucous type of the lower leg, are not suitable. The tar lacks sufficient penetration for the management of the deep, infiltrated cases. Here begins the domain of roentgenotherapy.

(1) Deutsch. med. Wochenschr., March, 1915.

Chajes² calls attention to the fact that Thederling neglected to mention what he meant by "tar." There is a vast difference between the various products obtained from the distillation of wood tar (*Oleum fagi*, *Oleum rusci*, *Oleum cadini*) and coal tar. As early as 1894, Leistikow, Fischel, and Sack pointed out that irritations rarely result from the use of the latter. If the pure concentrated coal tar is not available, then some of its products, such as liantral or purium, should be used.

Phenol in Erysipelas. Arneth³ reviews his experience with several hundred cases of erysipelas. He has encountered a few rapidly fatal cases, among them that of a healthy man between 30 and 40 who died eight days after the onset of severe erysipelas; staphylococci were found in pure cultures in the tissues. A healthy woman of 46 developed erysipelas after removal of a small dermoid cyst on the arm. The erysipelas spread over the whole body and fatal paralysis of the heart developed. In such severe cases all treatment is futile, and in the mild cases spontaneous recovery is the rule whatever treatment is applied. It is important, however, to restrict the spread of the erysipelas and he has never found anything so effectual for this as painting the region and vicinity with a 5 per cent. solution of phenol in oil. This is applied three or four times a day, leaving the area uncovered all the time. There is no caustic action from the phenol and the tissues are not irritated as by application of salves or dressings. The thin coating of oil softens the skin and works its way in; it relieves the pain and tension and by its anesthetic action tends to subdue the inflammation. Arneth states that in his years of experience with this carbolized-oil treatment he has never witnessed any signs of intoxication from it. This principle of refraining from irritating procedures and anything that might force the germs into the depths of the tissues, he thinks, should be followed in treatment of all suppurative processes. He refrains from touching even a blister, and never tries to cleanse the erysipelas region

(2) *Deutsch. med. Wochenschr.*, April, 1915.

(3) *Therap. d. Gegenw.*, August, 1914.

until several days after all signs of inflammation have subsided. Then he clears off with olive oil any loose skin, not permitting water for some time yet. Otherwise there is danger of the process flaring up again; still virulent germs might easily be mobilized by any manipulations of the kind. He reviews numerous other methods of treating erysipelas as practiced by about fifty other clinicians, but thinks the phenolized oil surpasses them all in efficiency. Treatment can be only symptomatic but everything that builds up the general condition is a help, sustaining the heart, possibly also whipping up the neutrophile leukocytes. He remarks that it is odd that the diseases with pronounced neutrophile leukocytosis, pneumonia, diphtheria, tonsillitis and erysipelas, do not immunize against future attacks, but instances are known of complete recovery from leukemia after intercurrent erysipelas. Glaser has reported a case of severe dropsy with subacute nephritis in a boy of 12 who was permanently cured after an attack of erysipelas.

Roentgen-Ray Treatment of Ringworm of the Scalp. In view of the intractable nature of this disorder and the inefficiency of most methods of treatment, any method offering good results is welcomed. Before the institution of Roentgen treatment in Paris, special schools were organized for children affected with the disease, and the state was put to great expense in furnishing hospital beds for charity cases. After the above method was successfully carried out by Sabouraud, an immense saving was made, which made special schools unnecessary and released the beds in the hospitals devoted to these cases.

The treatment requires special technical skill and proper apparatus for its successful accomplishment. In this country very little has been done in this field. That ringworm of the scalp is really a serious disorder, requiring a long, tedious course of treatment, is a matter not fully appreciated by most practitioners of medicine.

The technique as carried out abroad and also in a few places in this country is fully described by MacKee and Remer.⁴ The technical part of their paper follows:

(4) Med. Record, Aug. 7, 1915.

"The following technique is the one in use at Dr. Fordyce's clinic. There is nothing original about the method, it being the result of the work of many investigators in the same field—Sabouraud and Noiré, Holzknecht, Kienböck, Adamson, Sequeira, Hampson, Pirie, Corbett, Coolidge, MacLeod, and many others.

"The first step, for convenience, is to cut the hair close to the scalp. The next step is to divide the scalp into four equal-sized, triangular-shaped areas in the following manner: A mark is made (with a skin-pencil) about 2 inches inside of the hair-line above the forehead in the median line (Plate XIII). This we will designate point A. A steel tape measure is then placed with zero on point A and stretched along the median line over the vertex to the neck. At 10 inches another mark is made, point B (Plate XIII). This will usually be about 2 inches inside of the hair-line of the neck, but will vary somewhat in accordance with the size of the head. Points A and B should be adjusted so that they are about the same distance inside of the anterior and posterior hair-lines. As a matter of fact, A and B, in some instances, may fall exactly at the hair-line, but this makes no difference so long as the distance between them is exactly 10 inches. Point C is then indicated by a mark in the middle line exactly half-way between points A and B (Plate XIII). On every skull there is a flat surface just anterior to the occiput, and point C will fall from 1 to $1\frac{1}{2}$ inches in front of the center of this area. As a matter of fact, it is a good idea to insist upon point C being exactly at this location and adjust A and B so that they will be just 5 inches anterior and posterior to C. Point D is then located just above and in front of the right external auditory meatus (Plate XIII). The exact position of this spot is found by measuring 5 inches from A, B, and C. Point E represents the same location on the left side. It is essential that each point be exactly 5 inches from every other point, with the exception, obviously, of the distance between the points A and B, which should be 10 inches.

"The next step is to draw lines between the various points (Plate XIII). This will divide the scalp into

four triangular-shaped, equal areas. The reason for this will be made clear later.

"Next, each point (A, B, C, D, and E) receives an epilating dose of the x-ray in the following manner:

"For point A, the child lies on its back on a table. The entire face below the hair-line is protected by a lead mask. The tube is placed with the anode exactly over and $6\frac{1}{2}$ inches from point A (Plate XIII). It will be seen that the vertical rays will strike point A, while half of the oblique rays will fall upon the anterior portion of the scalp, and the remaining half will strike the protecting shield on the face and be wasted (Plate XIII). The measuring pastille is now placed on point A, and the epilating dose administered.

"Points B, C, D, and E are now to receive the epilating dose in the same manner, with the following exceptions: For point C the patient may recline on a table or sit upright on a chair. No protection is required. Here the oblique rays spread over the anterior, posterior, and lateral portions of the scalp (Plate XIII). For point B, the child may lie on his side on the table or sit in a chair with his forehead resting on the table. It is necessary to protect the neck, shoulders, and back. Here half of the oblique rays will reach the posterior portion of the scalp, while the other half will spread over the shoulders and back (Plate XIII). For points D and E, the patient lies on his side on a table, and the ears, face, and neck are protected (Plate XIII). Here, as in points A and B, half of the oblique rays are lost.

"It is of the utmost importance that each treatment be at right angles to every other treatment. For instance, an imaginary line drawn from the anode to point A will be at right angles to lines extending from the anode to points C, D, and E. Plate XIII will explain these angles better than words, and also it will demonstrate that the lines drawn on the scalp between the five points aid one in quickly determining the correct angle.

"A study of these illustrations will show, also, how the vertical rays strike the five points, while the oblique rays from one treatment overlap and re-inforce similar rays from other treatments. For instance, if a full epi-

lating dose is administered to point E and to no other portion of the scalp, the hair will fall out over only a very small area. But when similar doses are applied to points A, B, and C, the oblique rays overlap and complete alopecia is the result (Plates XII and XIV). In explanation, it may be stated that point E, being in the field of vertical rays, receives the full epilating dose, while a point half-way between E and B receives one-half an epilating dose. But this point also receives one-half an epilating dose when point B is treated. In this way, the entire scalp, when the five points have been treated, receives a full epilating dose. Scientifically, the well-known laws of intensity being in inverse proportion to the square of the distance and directly with the size of the angle of incidence, account for the equal distribution of the dose. This method of treating the entire scalp by five exposures was originated by Kienböck and is exceedingly accurate, as shown by Adamson, Pirie, Sequeira, and many others.

“For the purpose of determining the epilation dose, both the quality and quantity of ray must be estimated. There are numerous radiometers designed for the purpose of measuring the quantity, but we rely entirely upon either the Holz knecht or the Corbett radiometer. They both are modifications of the original Sabouraud-Noiré method of utilizing the change in color produced in platino-cyanide of barium when under the influence of the *x*-ray. The Corbett radiometer, the most recent and most scientific quantity instrument, consists of a series of colored glass tablets, each piece of glass representing the color assumed by the double cyanide of barium after it has received varying amounts of exposure—in other words, they represent doses of the *x*-ray measured in Holz knecht units. The Sabouraud (barium) pastille is placed on the scalp and the *x*-ray is applied until the pastille matches in color the particular glass tablet that corresponds to the epilating dose (5 H). The pastille and the tablet are compared in a black chamber under the influence of reflected artificial light. The colored glass tablets are standardized by the tintometer and are both accurate and permanent. The

PLATE XII.

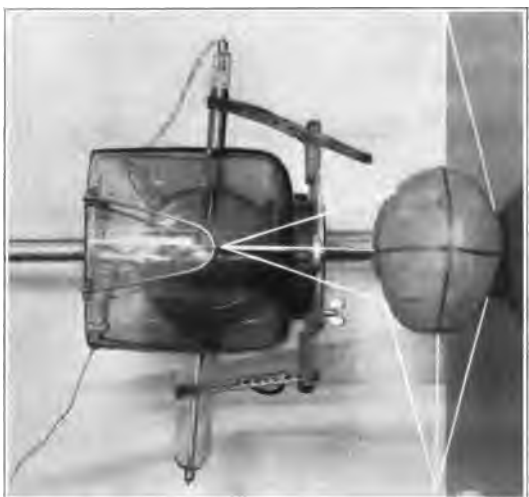


Roentgen-ray treatment of ring worm of the scalp. Complete defluvium by the Kineböck method.—MacKee and Remer (see page 125).

PLATE XIII.



(3)



(2)



(1)

Roentgen-ray treatment of ring worm of the scalp.

(1) Showing points A, B, C, and D. Also the lines between the various points and how the angles of incidence are obtained. (2) Showing point C. (3) Showing point A.—MacKee and Remer (see page 125).



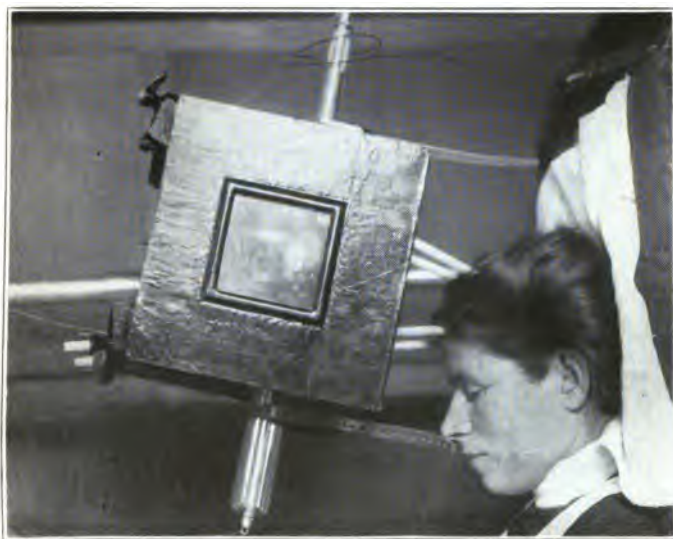
PLATE XIV.



Roentgen-ray treatment of ring worm of the scalp. Complete depilation in a case of disseminated ring worm by the 5-exposure method at one sitting.—MacKee and Remer (see page 125).



PLATE XV.



(1)

Roentgen-ray treatment of ring worm of the scalp.



(2)

(1) Showing tube stand and shield fitted with the wooden pegs for the purpose of holding the head steady. (2) Local depilation as a result of a single treatment.—MacKee and Remer (see page 125).

Holzknecht instrument has a strip of celluloid which, colorless at one end, gradually assumes color, which becomes deeper as the other extremity is approached. One-half of a Sabouraud pastille is placed under the celluloid strip, the other half is placed on the scalp and exposed to the x-ray. It is then compared with the half pastille under the celluloid and moved along the colored strip until the color registers. A scale of figures on the instrument allows a reading to be made in Holzknecht units. There are many technical details connected with the work that we cannot discuss here. Suffice it to say that in experienced hands this method of measuring the quantity is absolutely reliable.

"In such delicate technical work, it is, of course, advisable to utilize, especially in the beginning, as many safeguards as possible. Therefore, it is advisable to work with a constant amperage, voltage, and milliamperage, and a fixed parallel spark gap, a fixed distance, etc. In our technique, however, we are constantly changing these factors, and therefore disregard the indirect and depend entirely upon the direct methods and measurement of quantity.

"Since the advent of the Holzknecht radiometer, we have had no difficulty in estimating the quantity of ray employed. We have, however, had a great deal of trouble in measuring the quality, and this was entirely due to the impossibility of obtaining tubes that would maintain a constant vacuum during the treatment. Water and air-cooled tubes lessened the difficulty. The air-cooled hydrogen tube, also, has given good satisfaction. But the remarkable Coolidge tube has completely overcome all difficulties in this respect. This tube will maintain a constant vacuum with light or heavy currents for long periods of time, and may be used on one case after another throughout the entire day. For the direct estimation of quality, we utilize the Benoist penetrometer, aided by indirect instruments, such as the Heinz-Bauer qualimeter, the milliamperemeter, etc.

"We employ a 'hard ray;' never less than No. 8 of the Benoist scale, and earnestly advise against the use of soft rays. The original epilating dose, as devised by

Sabouraud and Noiré (B 1 or H 5), was based upon the use of 'hard rays,' obtained by exciting a tube with a static machine. This fact has been generally overlooked, and the use of 'soft' rays has been one of the causes of bad results in the past.

"We place the pastille on the scalp, as advised by Hampson and others, instead of half-way between the anode and scalp. There is no doubt in our mind that both accuracy and safety are enhanced by placing the pastille on the scalp. At half-distance the slightest movement of the child will alter the relative positions of the head, pastille, and anode, and this will cause a faulty estimation of the dose. With the pastille placed on the scalp, it makes no difference if the head moves a little closer to or a little further from the tube during the exposure. Lateral motion, however, must be avoided in any case. Furthermore, the changes in color are less marked at 'skin distance' than at 'half-distance,' and these light-brown shades are more easily estimated than are the deeper orange tints. The original dose of 5 H was estimated with the pastille at 'half-distance,' so that when the 'skin-distance' is employed the color change in the pastille will be four times less than at 'half-distance;' in other words, when the pastille is placed on the scalp, the dose must be multiplied by four. Therefore, the epilating dose at 'skin-distance' will be $1\frac{1}{4}$ H. As a matter of fact, $\frac{3}{4}$ H to 1 H will usually suffice, and $1\frac{1}{4}$ H is the maximum. If this is exceeded, permanent alopecia is likely to result. The maximum dose will produce a complete depilation, but experience has shown that if most of the hair falls out the result will be perfectly satisfactory, so that a dose of 1 H at 'skin distance' will usually suffice for all practical purposes. When employing the 'skin distance,' the distance between the scalp and anode of the tube is a matter of little moment so long as it is not too close and the same distance is employed for each of the five exposures. A working distance of $6\frac{1}{2}$ inches has been found satisfactory.

"The age of the patient makes no difference if the head can be kept quiet during the exposures. For this

purpose a shield, fitted with pegs made of soft wood, may be used, as shown in Fig. 16. The pegs must be made of very soft wood, so as not to act as a filter to the ray, and should be of a length that will fix the anodes at the proper distance from the scalp.

"To recapitulate, the essential points in the technique are briefly as follows:

"1. Cut the hair short. Indicate points A, B, C, D, and E with a skin-pencil. Be certain that the points are exactly five inches apart. Draw lines between the various points as indicated in the illustrations.

"2. Apply an epilating dose (H 1 at skin distance, B 9 or 10) to each of the five points. Apply protection only to the face, ears, and neck. The vertical rays are aimed directly at the point under treatment, and each exposure must be at right angles to the other exposures.

"3. Measure the quantity accurately with a reliable radiometer. The quality must be estimated by means of some reliable penetrometer, such as the Benoist instrument, together with indirect methods, such as the milliamperemeter, ammeter, etc.

"4. The head must not move very much during the exposure. Absolute immobility is desirable.

"This intensive method of treating ringworm of the scalp is scientific and accurate, but on account of the delicate technique it can be employed only by trained radiotherapentists.

"The hair falls out at the end of about three weeks and starts to regrow in about three months. It is essential that no irritating applications be applied to the scalp for two weeks prior to the treatment. As a matter of fact, if chrysarobin, tar, or iodine has been applied, it is better to await the lapse of four weeks. Subsequent to the treatment, such chemicals as iodine, tar, and chrysarobin are prohibited. It is preferable to allow no application for about a month, at which time a 5 per cent. ointment of sulphur or ammoniated mercury, or some other mild antiparasitic agent, may be employed. While the hair is falling, the child should wear a linen cap, which, with the fallen hair, can be destroyed, so as to protect other children.

"Sometimes, a week or two after the treatment, all the patches of ringworm become erythematous and even painful. This is no indication of an error of technique and should not cause alarm. Also, occasionally, a transitory erythema may be noticed a day or two after treatment. This is an 'electrical' erythema and will have no bearing upon the end-result. On the other hand, a true radiodermatitis indicates an error in technique and may be followed by more or less permanent alopecia. Fortunately, however, with the modern technique and a skillful operator, such an undesirable occurrence is rare indeed. Not infrequently, a few hours after the treatment the child may feel indisposed, but this disappears in a day or two.

"In Dr. Fordyce's clinic, Drs. Steinke and Sheer have been treating several cases each week for the past two years, and there has not been a single untoward result, and this is in accord with the findings in the European clinics. One of us (MacKee) has been employing the intensive method for over eight years, with only two bad results. In one instance, a girl of eight, the hair failed to regrow in one area. This was due to the faulty construction of a tube in association with the half-distance method. The same error could not happen with the present technique. The other case was that of a baby where the regrowth of hair was sparse in two areas the size of the silver dollar. This was the result of an erythema following the use of iodine within a short time after the treatment.

"In the early days of the intensive treatment of ringworm of the scalp, accidents were plentiful; but experience, reliable apparatus, and skill in following out technique have all combined to make the method reliable and practical. We will state, too, that there has never been an injury to the brain or to the general system. Not infrequently, the new growth of hair will be a little lighter or a trifle darker in shade. Again, the new hair may be curly, while the former hair was straight, and *vice versa*.

"It is not always necessary to depilate the entire scalp. If there are only one or two lesions, the regions occu-

pied by these lesions may be treated; but when the diseased hair falls out it must not be allowed to infect healthy portions of the scalp. Plate XV represents a case of tinea tonsurans where there were three or four lesions in an area about the size of an adult palm. The remainder of the scalp was unaffected. A local defluvium was produced by a single treatment, as shown in the photograph. The treatment resulted in a cure.

"Inasmuch as we estimate the quantity by direct measurement, the element of time does not enter into our calculations. With the apparatus and technique in use at present, an epilating dose can be administered in a few seconds or in a few minutes. We usually give the dose in three minutes, making a total exposure, for the five areas, of fifteen minutes. Considerable time is lost in mapping out the areas on the scalp, arranging the position, obtaining the confidence of the child, etc., so that it usually requires about an hour to complete the treatment in one case. It is not necessary to expose all the areas at one time. If one desires to do so, one area may be treated each day, five consecutive days being utilized for the complete procedure.

"Relapses occur occasionally, making it necessary to depilate a second time. In such instances, it is usual to allow a period of from six to twelve months to elapse. We doubt, however, if this long interval is essential. We have had numerous cases where we have depilated a single small area and later the entire scalp has become infected, necessitating a universal defluvium. In these instances we waited until the hair began to grow in the original patch, about three or four months, and then depilated the entire scalp. To our surprise, the hair reappeared in the original area before it began to grow over the remaining portions of the scalp. However, it is probably wise to allow an interval of at least six months, so as to avoid any possibility of an accumulative effect, especially if the hair is not growing vigorously. In several instances where the entire scalp was depilated by the intensive method, we noticed that the hair grew more rapidly in the areas previously affected by the disease than in the normal scalp.

"The question of idiosyncrasy undoubtedly occurs to the reader. We can not deny that a true idiosyncrasy is a possibility, but it must be extremely uncommon. We have personally never detected a single instance of true idiosyncrasy in connection with the scalp. Thousands of cases have been successfully treated in Europe, and our foreign colleagues ascribe the comparatively few bad results to faulty technique rather than to idiosyncrasy.

"Although in the hands of experienced radiologists accidents are extremely rare, yet it can not be said that the *x*-ray treatment of *tinea tonsurans* is entirely devoid of danger. On the other hand, there is no question but that if properly conducted it is the best means that we have at the present moment for combating ringworm of the scalp; and we should here include the hitherto practically incurable disease *favus*. Here, however, the crusts must be removed before the application of the *x*-ray, because they absorb the ray, thereby acting as filters, and interfere with the accuracy of the dose. In this connection, however, we desire to call attention to some recent work conducted by Strickler* (*vid supra*) of Philadelphia with the vaccine treatment of *tinea tonsurans*. He succeeded in curing several cases by this method, and it is quite possible that the future will see this procedure supersede the *x*-ray treatment of ringworm of the scalp (see Plates XII-XV).

Lymphangiomata Cured with Radium. Abbe⁴ makes some observations on the treatment of lymphangiomata with radium.

Six patients were treated: in three the lesion involved the tongue, in two the sides of the neck, and in one the leg, the latter being an extensive case of mixed type. The cases are all recorded as either cured or in the process of cure. A definite technique is not given.

Roentgen-Ray Keratoses Cured with Radium. Tousey⁵ reports the successful management of Roentgen-ray keratoses in his own person. The growths were

(4) Med. Record, Aug. 7, 1915.

(5) Jour. Amer. Med. Ass'n., April 24, 1915.

*Jour. Cut. Dis., March, 1915.

pared down and 20 milligrammes of radium element applied for 30 minutes. Each lesion so treated reacted in varying degrees, but was restored to the normal in one month.

Radium Treatment of Keloids. Simpson⁶ records the successful treatment of two cases of keloid with radium.

In the first case, that of a girl aged 15, the keloid followed a phenol burn and occurred on the great toe of the right foot. The lesion was bluish-red in color, covered an area of about 4 sq. cm., and was elevated about 2 cm. above the level of the surrounding skin. A quarter-strength radium applicator, screened with 0.1 m. of lead, was used. Six hourly applications were made over a period of eight days, and after a rest of six weeks a similar series of treatments was carried out. A slight inflammatory reaction occurred, and four weeks after the last application the lesion had practically disappeared.

The second case occurred in a woman 45 years of age. In this case the lesion was a large keloid situated between the spine and the lower angle of the left scapula, and had followed a burn with a flat-iron. It was about 15 cm. long and 4 cm. wide and was elevated 2 cm. above the level of the skin. Eight treatments, of 20 minutes each, were given to the lower half of the lesion with a quarter-strength radium apparatus, unscreened, during a period of 16 days. Moderate reaction followed, which subsided in four weeks. About one month later, certain areas that had not disappeared were given three hours' exposure, in fractional doses, with one-quarter and one-half strength applicators, screened with 0.1 m. of lead. This resulted in complete involution.

Chronic Callous Ulcer of the Leg and its Treatment. On account of the many leg ulcers occurring in people who have to stand more or less constantly during the day, the method of treatment outlined below is recommended by Duncan⁷ to obviate this difficulty.

He suggests that a Martin's rubber bandage, about 10

(6) Jour. Amer. Med. Ass'n., April 17, 1915.

(7) Med. Jour. of Australia, July 17, 1915.

or 12 feet long, be applied directly on the skin and carried from the toes to the knee. The bandage is applied in the morning before the patient arises and is kept on during the day. At night the leg is washed with hot water and soap, while the immediate neighborhood of the ulcer and the ulcer itself are washed with a solution of phenol in the strength of 1 in 60. Then the ulcer and the parts around it for an inch or two are covered with three pieces of lint soaked in the same solution. A piece of oiled silk is then placed over this and the leg bandaged from the toes to the knee with a calico bandage. He further suggests that the rubber bandage should be cleansed each night and hung up in such a manner that it will dry before morning. When the dressing is removed in the morning, it is important that the rubber bandage be applied, as above stated, while the patient is still in bed.

Duncan states that he can warmly recommend this method of treatment after using it for many years.

Treatment of Verruca Plana Juvenilis. Many observers have recorded the successful treatment of this type of wart by the internal administration of arsenic, and some with other preparations. Charles J. White⁸ records the successful management of seven cases by the internal administration of protiodide of mercury. He suggests that it be given in pill form, in the dosage of $\frac{1}{4}$ grain, three times daily. Inasmuch as this form of treatment has not previously been recorded and that in this group of cases it has been so successfully employed, it would seem that its further use is indicated.

Treatment of Paronychia. As this disorder is chronic and exceedingly resistant to many methods of treatment, any successful one brought forward is welcomed. A report of sixteen cases, with an outline of a special method of treatment, is made by Morrow and Lee.⁹ Of these cases, two were acute and fourteen of long standing, and all were produced by *Staphylococcus pyogenes albus*. There were four males and twelve fe-

(8) Jour. Cut. Dis., November, 1915.

(9) Jour. Cut. Dis., April, 1915.

males, the ages of the former ranging from 30 to 50 years, and of the latter from 10 to 60 years.

Treatment consisted in the use of a saturated solution of chrysarobin in chloroform. The technique is as follows: The plica unguium is raised from the nail and the affected area swabbed with the chrysarobin preparation. This should be done once daily, until there is no longer any pus formation. The latter condition usually subsides after a few applications. In case much reaction occurs, the treatment should be suspended or pursued with caution.

By the above method all the patients were cured in from one to three weeks.

Treatment of Burns. Ravogli¹ records a group of cases in addition to the eighty-eight cases which he recorded in 1902. In his first group, eight were of the first degree, fifty-four of the second, and twenty-six of the third, and the results showed recovery in sixty-one, death in twenty-four, while three patients disappeared. The recent report covers a series of forty-nine cases, of which thirty-four were men, seven were women, and eight were children. In the latter group, a fatal termination occurred in the case of two men, two women and two children.

In the first degree burn, dry powder, such as talcum, bismuth, or alum, is recommended. In case of severe pain, compresses moistened with a solution of aluminum subacetate in the strength of 2 to 5 per cent. are applied. As soon as the pain is relieved, dry powder is reapplied. For burns of the second degree, moist applications of a solution of aluminum subacetate are recommended. Distended bullae are exacuated, leaving the epidermis as a covering. Compresses of aluminum subacetate are also used for burns of the third degree. The burnt tissues are allowed to separate naturally. With pus formation and temperature, compresses of mercuric chloride in the strength of 1 to 2000 are used. For the granular stage, the open-air treatment is suggested, leaving the surface exposed for one hour at first and later for two or three hours at a time. At a later date, the granulations are

(1) Jour. Amer. Med. Ass'n., July 24, 1915.

stimulated by the application of a solution of silver nitrate every other day. With pale granulations, showing pus formation, a mixture of oleum ricini and balsam of Peru is used. Symptomatically, for neuritis, the intravenous injection of Fischer's solution, with the internal administration of digitalis, has given good results. Quinine, also, is considered beneficial.

Trichloroacetic Acid. The therapeutic value of this preparation in dermatology was made known to the dermatologic world by Charles N. Davis, twelve years ago. No report of its action was made by him, however, until recently.² He first employed it on patches of degenerative seborrhoea and on pigmented moles with good results. His technique is as follows:

The skin is first cleansed with benzine to remove the oil and to facilitate the penetration of the acid, after which the area is further cleansed with alcohol. A saturated solution of the acid is then applied to the area to be operated on until the surface turns a milk-white. This is done by means of a bit of cotton twisted about a Japanese bamboo toothpick. Then a pad of cotton wet with water is applied. After a time, the acid is neutralized with an alkaline solution, preferably a 4 to 5 per cent. Labarraque's solution, after which the cauterized area is covered with ichthyol varnish. The latter consists of 25 per cent. ichthyol in a saturated solution of boric acid, to which are added 8 grains of tragacanth to each ounce. When this has nearly dried, teased-out cotton is imbedded over it, after which another coat of the varnish is applied, which makes a fixed permanent dressing. This is allowed to remain on until the lesion heals, unless secondary infection occurs.

The disorders in which the use of this remedy is recommended are pigmentations, papillomata, nevi, soft and flat warts; in seborrhoeic and warty growths, and particularly in the senile type of wart. In the harder warts of children it is necessary to insert the acid into the wart with a bamboo toothpick. Its use is also recommended in xanthelasma and molluscum contagiosum, in beginning rodent ulcer, and the small variety of super-

(2) Jour. Cut. Dis., October, 1915.

facial epithelioma of the face; in fissures of the mouth and lips and about the nares and anus; also in lichen planus papules in the mouth. It is occasionally of value in lupus erythematosus, and is further recommended in milium and acne varioliformis.

GONORRHEA.

Inoculation of Apes with Gonococcus. No one as yet has succeeded in producing a lesion in animals, not even in anthropoid apes, analogous to gonorrhea in man. Working with *Macacus rhesus* monkeys, Reenstierna¹ was unable to produce more than temporary irritation either in the conjunctiva or in the urethra by rubbing with fresh urethral secretion, rich in organisms. Using organisms grown in a special medium of human serum, he succeeded in infecting the eyelids of two animals. Organisms grown in a medium containing *Macacus*-organ-extract showed greater affinity for the animals, inasmuch as six of them showed marked symptoms in the eyelids; but in none, however, could there be demonstrated an increase in the number of organisms.

Prostitution and Venereal Disease in War-Time. The importance of venereal disease among the troops is shown by the fact that during one year of the Franco-Prussian war 33,528 men were treated. This number represented 71 per cent. of all the hospital cases other than wounded men.

The two factors in the prevention of disease, Neisser² says, are, first, warning the men against the terrible results of infection and exhorting them to avoid intercourse; and, secondly, the treatment of all known prostitutes so that they may do the minimum of harm. The management of syphilitic prostitutes is relatively simple, but it is almost impossible to be sure that prostitutes are free from gonococci. For this reason, he advises the use of prophylactics and the distribution of condoms, knowing full well that this would be met by the opposition of many people for ethical reasons.

Acute gonorrhea can not be treated in men on duty.

(1) Arch. Derm. Syph., April, 1915.

(2) Deutsch. med. Wochenschr., Jan. 14, 1915.

The patients should be isolated, given complete rest, and treated by specialists. Syphilis, however, can be treated even when the patients are on the march by using neo-salvarsan and water carried in small ampules. Mercurial injections can be given anywhere, and when properly given the untoward results are *nil*.

Acute Gonorrhea Treated by Electricity. Russ^s has treated twenty-eight patients, military and private, in this manner.

The patient is ordered to retain urine for a few hours, and the rate of discharge is visible on a disc of cotton-wool retained within the prepuce. A Gram-stained smear is made of the discharge at the outset of the treatment. The patient is directed to pass about half of the urine and retain the rest. This preliminary urination washes the urethra from behind, and is the only lavage employed. He then reclines on the couch and a platinized catheter is lubricated and passed gently down to the compressor urethrae. This catheter is quite smooth, has numerous perforations, and it is furnished with a stylet of platinum wire and a rubber collar which just enters the meatus. A lint-covered pad lined by a flexible metallic core is wrung out in warm saline and applied to the perineum, scrotum, and root of the penis. A 2 per cent. solution of sodium iodide is then gently injected into the catheter. The rubber collar prevents its flowing away between the instrument and the urethra. The pad is connected to the negative and the stylet (within the catheter) to the positive pole of the battery. A current of 1 or 2 milliamperes is passed for twenty-five minutes and the catheter is kept full of the solution from time to time by means of a syringe. The current being turned off, the catheter is withdrawn and placed in a glass of water. After the first few treatments, the perforations in the catheter will be seen choked with masses of yellowish muco-pus, which are laden with gonococci, drawn from the urethra. On shaking the catheter in water, most of these masses become detached from the instrument and soon settle at the bottom of the vessel. The patient now passes the rest of the urine, and

similar masses of muco-pus will be seen in it. As the patient progresses, this harvest diminishes, and when the discharge has ceased there is nothing visible in the perforations at the end of such treatment.

This treatment is applied every day in cases of acute gonorrhea, and the signs of progress are: (1) the abolition of the scalding during urination; (2) reduction and disappearance of the discharge. When the discharge has ceased, the battery is applied every other day, and after for from three to six more applications the urine is free from purulent threads. The treatment is painless and apparently produces no bad effects. Avoiding alcohol and other abuse, a cure is to be expected in three to four weeks. The present prospect is that this period will become shorter after more extended application.

The following advantages are claimed for the method:

1. Its effect is more certain than by other methods.
2. After arrest of the discharge, the threads and flakes disappear more rapidly from the urine.
3. There is a marked absence of complications.
4. It is a powerful controller of gonorrhea, to be administered by qualified experts. This is a desirable contrast to the casual or over-zealous self-administration of some treatments which is so frequently permitted in this disease.

Succinimide of Mercury in Gonorrhea. Captain Lake,⁴ U. S. Army, stationed in the Philippine Islands, observed that urethritis in syphilitics who were being treated by intramuscular injections of succinimide of mercury usually ran a shorter course. With this in mind, he treated twenty soldiers, most of whom were natives, by giving them injections into the muscle.

Of the first eight patients, seven received, in the first instances, doses of 40 mg. of the mercury succinimide, and one had only 13 mg.

Of these eight men, seven became clear of gonococci quite promptly: one in two days, one in three days, three in four days, and two in six days. The other patient remained positive after two doses of 40 mg. of the drug. One of the seven patients in whom the disease

(4) Med. Record, April 17, 1915.

cleared up relapsed (or was re-infected) after several weeks, but this man and one who did not clear up on the smaller doses both became negative within 48 hours after receiving doses of 78 and 65 mg., respectively.

Twelve men received initial doses of 65 or 78 mg. of the mercury salt, and of these ten promptly became free from gonococci (five in 2 days, one in 4 days, two in 7 days, one in 13 days, and one in 19 days), while two showed no good effects from the drug whatever.

Of the ten, three remained continuously clear up to date; one was clear for three weeks and was then discharged from the service; two relapsed in two or three weeks, received another injection of the mercury, in larger dosage, cleared up again, and remained clear; two relapsed (or were re-infected) two and one-half and three months, respectively, after leaving the hospital, and are now under treatment; and two could not be followed up.

In the twenty cases, thirteen men (65 per cent.) became clear of gonococci in an average time of 6.7 days, and remained clear for periods ranging from 3 weeks to 7 months. Two remained clear for several months and were then, in all probability, re-infected. This would raise the number to fifteen (75 per cent.). It is possible that one or both of the two cases who could not be followed up remained clear also.

Of the remaining three cases, one pursued an untoward course without any assignable cause; one man never pursued the treatment consistently, and was using all sorts of weird remedies, prescribed by native "medicine men," and one seemed as likely to have been re-infected as to have relapsed.

Among the natives, a recurrence after two or three weeks is very likely to be a re-infection, for they are exceedingly promiscuous and undisciplined in their sexual relations, and a man who has just left the hospital after an attack of gonorrhea is almost certain to spend his first night outside in the arms of a woman who is, in all probability, herself infected. Thus, if a patient remains free from gonococci for several weeks, it is fairly safe to assume that the man is cured; while, if the organisms do re-appear after two or three weeks, it is at least

an even chance that there has been an exposure and a re-infection.

From the foregoing it will be seen that the results in these twenty cases show 65 per cent. of the patients cured in an average time of less than one week; 15 per cent. probably cured and re-infected; 10 per cent. lost for purposes of record; and only 10 per cent. showing unsatisfactory results.

Three men had no local treatment at all. Two of these were not followed up and the other relapsed, so, for the present at least, it seems best to accompany the mercurial treatment with the old and accepted local and internal remedies.

Minimizing the Difficulties of Transplantations of a Gonococcus Culture. One who handles gonococcus cultures is familiar with the uncertain viability of the organism. To safeguard a culture, the ordinary practice is to grow it on ascites-agar and to transplant at intervals of 24 to 48 hours. Outside large laboratories, with a corps of special assistants, this becomes burdensome and expensive.

A. P. Olmacher⁴ found it possible to increase the interval between transplantations from seven to fourteen days, or even longer, using a solid culture medium as a substratum. The details are as follows:

Löffler's blood-serum mixture of the usual formula, with bouillon neutralized according to the prevailing standard, constitutes the culture medium. It is preferable to have the test-tube slant of Löffler's medium with its original condensation water. If perchance this condensation water is lost, it may be replaced by the requisite amount of ordinary bouillon (standard neutralization). The transplantation, after one or more subcultures on ascites-agar, is effected by the platinum loop, sowing directly into the pool of condensation water, or bouillon replacing the condensation water; but not, as by the usual custom, of rubbing the inseminated loop over the surface of the slant. With its condensation water thus impregnated, the tube of Löffler's medium is capped to prevent evaporation, and without undue agi-

(5) Jour. Amer. Med. Ass'n., Feb. 13, 1915.

tation set in the incubator. After a period generally not more than forty-eight hours, it will be found that a transparent, glistening, colorless line of culture appears above the condensation water, and, by a process resembling the "creeping of salts" in strong saline solutions, it will be seen that this line of culture slowly but steadily ascends the surface of the slant, continuing for seven, ten, fourteen, or even more days. From this mounting line of culture, further transplantations may be effected at a convenient interval, the length of which may be ascertained for a given gonococcus strain after a few experiments.

Adult and Infant Types of Gonococci. The group of organisms known as the gonococcus has been regarded as a heterogeneous one from the point of view of the various immunologic reactions. Morphologically and culturally, the different strains of gonococci seem to be identical, but coincident with the use of the complement-fixation test for diagnostic purposes differences in the power of various strains to bind complement were observed when monovalent antigens were used.

The striking clinical distinction between gonococcal infection in the adult and in young female children suggested to Pearce⁶ a comparative study of gonococci isolated by culture from the two classes of cases.

Two principal groups of cases are recognized clinically. The organisms isolated from these groups were examined and compared in their immunologic reactions of agglutination and complement-fixation. Nine so-called adult strains and six infant strains were studied.

As is well known, the isolation of the gonococcus from the pus in a well-marked case of urethritis is comparatively easy, but the isolation of the organism from a case of vulvovaginitis is more difficult. The easiest method of doing the latter, and one which rarely failed, was by the use of blood agar plates. The culture was taken by means of a platinum loop passed high up in the vaginal canal. If any gonococci were present, they usually appeared within eighteen or twenty hours' incubation at 37° C. as the familiar tiny dew-drop colonies.

(6) Jour. Exper. Med., April, 1915.

Unless there was an overwhelming number of contaminating organisms in the least heavily planted plates, the gonococcus colonies grew first, and in fact several hours before the other organisms appeared. If the plates are made of ascitic agar, the initial growth of the contaminating organisms is more rapid than that of the gonococcus, and in eighteen hours practically every plate will be covered with them, making the selection of even probable gonococcus colonies extremely difficult. Once isolated in pure culture, the strains were grown on a stock media of ascitic veal agar.

The mono-valent sera used in the immunologic experiments were made by immunizing rabbits to the single adult and single infant strains. The inoculations were all intravenous ones of living 24-hour cultures, and were made weekly, beginning with one-twentieth or one-tenth of a culture and increasing gradually to one and one-half to two cultures. Usually, from eight to ten weeks sufficed to produce a serum having a good content of antibodies.

When fresh, immune rabbit serum was found to agglutinate its homologous organisms on the average in a dilution of 1:1000 (in some instances, 1:1500), and the titer of various rabbit sera did not vary appreciably whether the rabbits were immunized with a freshly isolated strain or with the same strain after it had been under cultivation for twelve months.

It was found that serum *X* (adult type) agglutinated its homologous organism and strain *Y*, also an adult type, equally well in dilutions of 1:1000, and some specimens of sera agglutinated its homologous organism at 1:1500. The average titer of other adult strains with this immune adult serum was 1:333, although strain *A* agglutinated at 1:666 and strains 1 and 3 at 1:800. With infant strains titered against the adult immune serum, however, no agglutination was found in dilutions higher than 1:200, and the average was 1:66 to 1:100. The strains isolated from cases of gonorrheal ophthalmia approached the adult type in the agglutination reaction with this adult immune serum, although above the dilution of 1:100 the reaction was not so marked as with

the adult strains. The highest titer obtained with these three ophthalmic strains was 1:500.

In another series of reactions, the same adult strains were titered against a serum prepared with an infant type of organism, *BH*. The titer of this serum with its homologous organism was high, 1:1000, and with some specimens of sera 1:1200; but the titer of two other infant strains, *C* and *WE*, was also high, 1:800. The average titer of this infant immune serum with infant strains was 1:500. On the other hand, when adult strains were used with this infant immune serum rather striking differences were again brought out. In no case did agglutination occur in dilution of the serum above 1:200, and the average was 1:100. Strains 1, 3, and 5 were the only ones showing a double plus reaction, and this occurred in dilutions of 1:66 and 1:100. The three ophthalmic strains when titered against this infant immune serum did not agglutinate in dilutions above 1:100, thus conforming again to the adult type.

For the complement-fixation, antigens were made according to several different methods, but the one finally adopted was that given by Park and Williams. It was found in making these mono-valent antigens that it made no difference whether the final heating at 80° C. for an hour was done before or after filtering, or whether the autolysis at 56° C. lasted for one hour or two. Moreover, in the few instances tried, there was no difference noted in the same antigen heated at 80° C. for one hour or at 100° C. for twenty minutes. The antigen should be used the same day as prepared, if possible, for in some instances it becomes anticomplementary over night. When an antigen is anticomplementary in dilutions commonly used or becomes so in such dilutions as to prevent its being used, refiltering it or reheating it will not remove its anticomplementary character.

The sheep-rabbit hemolytic system was used throughout these experiments, as it was found that the serum of both normal rabbits and those immunized with the gonococcus contained a stronger natural hemolytic amboceptor for hen than for the sheep red corpuscles.

Before performing each experiment, a careful titra-

tion of the hemolytic system was done, with varying amounts of amboceptor and complement, and for the final test two units of amboceptor and two of complement were used. Moreover, an equally careful titration of the antigen was made, and in each case one-half the amount of antigen that was entirely free from anticomplementary action was used. The tests were all made in the water bath at 37° C.; antigen, immune serum, and complement were incubated for 45 minutes, then the hemolytic amboceptor and sheep red corpuscles were added, and the total mixture was incubated for one hour.

When mono-valent antigens made from the so-called adult strains of gonococci were titrated against a mono-valent immune serum prepared with an adult strain, complement was bound in dilutions which caused no deviation of the complement when tested with a so-called infant type of immune serum.

When the infant strain antigens were titrated against the same mono-valent infant and adult immune sera, similar differences were observed.

Antigens made from three organisms isolated from ophthalmic cases when titrated against mono-valent adult serum deviated complement in higher dilutions of this serum than when titrated against infant immune serum.

It should be emphasized that in order to determine any degree of specificity whatever of the various strains of gonococci, the smallest amount of complement possible was used (two units) with the largest amount of antigen and immune serum (half the amount that was not anticomplementary). The test so made is an extremely delicate one. Such quantities obviously would not be practical for the ordinary clinical procedure.

From the agglutination and complement-fixation results, it is evident that within the large group of organisms known as the gonococcus two more or less distinct types may be differentiated. These types correspond to the clinical source of the strains, whether from an infection of the acute urethritis type in the adult or from the vulvovaginitis of infancy and early childhood. The

difference between these types of gonorrheal infection is well recognized clinically, and the immunologic tests would seem to offer an experimental indication that at least a part of the difference is due to an inherent difference in the two types of organisms causing the infections. It is highly probable that gradations between the two types exist; that the gonococcus may be more or less of a labile group within itself; and that if a large enough number of strains were tested by their immunologic reactions certain of these would be found partaking of the characteristics of both types. The conclusion is not to be drawn that the adult and infant types of gonococci form two distinct clear-cut groups separate one from the other, but that certain distinctions exist between them, relative differences which can be brought out by the immunologic reactions of agglutination and complement fixation with specific immune sera. But the distinction between the two types is not an absolute one.

In no instance did any agglutination of either type of gonococcus occur with sera immune to *Diplococcus intracellularis* or to *Micrococcus catarrhalis*. Moreover, there was no binding of complement with meningococcus antigen and gonococcus immune serum, and none with gonococcus antigens (adult or infant type) with either meningococcus or catarrhalis immune serum.

Schwartz and McNeil state that in the ten cases examined of vulvovaginitis in children under five years of age, the complement-fixation test of the patient's blood was negative, although in all the gonococcus was demonstrated in smears and by culture. They thought that the negative results were due to the fact that there was no involvement of the cervix, only the vulva, urethra, and vagina being affected, and that unless the cervix was involved a positive complement-fixation test could not be obtained. The reason the tests were negative may have been because a suitable specific antigen was not used. A polyvalent antigen, it is true, was used, but one made from adult strains only. Therefore, in making an antigen for the clinical complement-fixation

test for gonococcus infection, it would be well to employ strains obtained from infants as well as from adults.

Epididymotomy for Acute Epididymitis for Out-Patients. Until about a year ago, at the Boston Dispensary, Crosbie and Riley⁷ had been treating gonorrheal epididymitis conservatively by local applications, strapping, and rest in bed with ice-bags. They found that such treatment had many drawbacks. In the acute cases the pain was very severe for a week or more, the patients frequently looked septic and had malaise, even after a subsidence of the acute pain. Many of these patients continued to have dull pain and uneasiness at times for many months after. Then, too, after the acute symptoms had subsided and treatment of the urethritis, which had been suspended, had begun again, those cases which had been treated palliatively were very likely to recur.

Finding this palliative treatment far from satisfactory, the authors did epididymotomy in the acute cases. The results were so gratifying that now they advise operation even in the milder ones. During the past year they have operated in twenty-eight cases, two of which were double. In one the double infection came simultaneously, and in the other first the left was involved, and in about ten days the right became infected. In this case, when the second epididymis became involved, the patient returned at once and asked to have the operation done.

For local anesthesia the authors use from 20 to 30 c.c. of 1 per cent. novocaine, to which has been added from 3 to 6 drops of adrenal solution 1:1000. The method is much the same as that which Braun, in his recent book on local anesthesia, advocates for any operation on the testes. The best syringe is a 10 c.c. glass syringe with a 2-inch needle. The first step is to infiltrate the cord. This is done by grasping the cord, at the point where it emerges from the external ring, between the thumb and forefinger of the left hand. The needle is inserted into the cord and from 5 to 10 c.c. of solution is injected in all directions. It is well, also,

(7) Boston Med. and Surg. Jour., May 6, 1915.

before removing the needle, to point upward and inject a little solution into the inguinal canal, to be sure to get complete blocking of all the nerves in the cord. The needle is then pushed downward, through the same point of entry, along the cord, to the region of the globus major, and a little more solution injected. The scrotum is then circuminjected on the side to be operated on, all the way to the perineum. This injection is made where the scrotal skin merges with the skin of the thigh. Even though the operation be unilateral, Braun recommends anesthetizing the scrotal skin all the way around, just as one would for a double operation. Finally, a little novocaine is injected along the line of incision. In order to get perfect anesthesia, it is well to wait ten or fifteen minutes. With the anesthesia thus obtained, it is possible to handle the testicle and epididymis without the slightest discomfort. There is no sensation for two or three hours after, so that after operation a patient walks out really much more comfortably than he came in. Even after the anesthesia works off there is very little pain.

The incision is made laterally, so that the tunica vaginalis is opened near the epididymis. A lateral incision of this sort is hardly visible after a few weeks. In the very acute cases there is always considerable hydrocele fluid, so that it is easy to cut through the tunica vaginalis; but in one of many days' duration it frequently happens that the hydrocele fluid has disappeared and the tunica vaginalis has become adherent to the tunica albuginea and one has to use care not to cut into the testicle. Within the hydrocele sac, conditions vary. In some there is merely clear straw-colored fluid and no adhesions; in others the fluid is turbid, containing fibrin, as in a gonorrheal joint; and in some, particularly the long-standing cases, there are many adhesions, especially of the tunica vaginalis to the epididymis. With the blunt end of a knife or with a pair of scissors the adhesions are freed and the testicle and epididymis are delivered through the incision. The inflammation is usually most severe at the lower pole, the globus minor. This undoubtedly is due to the fact

that as the inflammation travels along the vas it hits this part first and lodges in the fine convoluted tubules. These undoubtedly become occluded and check the inflammation from proceeding. Occasionally, the major is also involved and rarely the inflammation is worse in the major. Apparently, it never reaches the testicle itself.

After delivering the testicle, the epididymis is carefully examined. When the inflammation is worst, the epididymis is hard and indurated. Occasionally, minute abscesses can be seen as yellowish-white dots. It is very rare that there is a single abscess large enough to give definite fluctuation. Multiple punctures are made in the indurated area, whether or not there is visible pus, with a tenotome. The tenotome is plunged through the fibrous covering deep into the epididymis. It frequently happens that a drop of thick yellow pus wells up in the puncture. Smears from this pus nearly always show gonococci. Even though a drop of pus is found in one place, it seems wise to puncture the whole indurated area. When a pus cavity is found, the hole is enlarged a little to allow free drainage. Occasionally, in making these punctures a small artery is struck. This bleeding is easily stopped by a fine catgut stitch. After all the likely places have been punctured, it is well to wash off the testicle and epididymis with warm salt solution to remove the evacuated pus and blood clot. A drain either of gauze or rubber tissue is then placed lengthwise along the epididymis and brought out at the lower end of the incision. The testicle is then pushed back into the tunica, and the wound closed loosely with silkworm-gut sutures that pass through all layers. This allows any hydrocele fluid that forms to work out. In some cases, where the tunica had been tightly closed, hydrocele fluid may persist for some time. A large dressing is applied and held in place with a T bandage. The patient is then allowed to go home and take a cathartic, and if possible to remain in bed for a couple of days. He later reports to the clinic for dressings. The wick is removed on the third or fourth day and the stitches in about a week. Although the authors

advise rest in bed, in some cases the patient has not quit work at all. The day following the operation, the patient is apt to have fever, but usually with little pain. At the end of about thirty-six hours, the temperature becomes normal and remains so.

Many of these patients when they come in look septic and are in great pain. There frequently is a rise in temperature and pulse. Even the first day after operation the entire aspect of the patient has changed. The sallow, septic look has gone. The relief from pain is almost miraculous. A patient requiring morphine in large doses before operation generally sleeps without any drug, even the first night after operation.

In the very early cases, that is, within forty-eight hours from onset, there usually is no definite pus. There is a great deal of edema and thickening of the epididymis. Punctures are followed by a serous ooze. In most of the later cases, definite small abscesses are found. The relief of symptoms is just as marked in those having no pus as in those who have it.

In only one case was there a recurrence on the side operated upon, and that was many months after, following an entirely fresh gonorrheal infection the exposure to which was admitted by the patient. This man returned at once and requested operation.

After epididymotomy one is able to start local treatment for the urethritis earlier than on patients not operated upon. This is one of the strong points in favor of the operation.

In all the cases the posterior involvement yielded readily to treatment after operation. Frequently, they cleared up with remarkable rapidity. One man who at the time of operation had decidedly bloody urine and marked posterior symptoms, had both urines clear with shreds two days after operation.

Epidemic of Acute Hydrocele and Orchitis. L. Nicholls' saw 50 cases of acute epidemic hydrocele among the 400 native porters attached to the carrier corps of the British East African forces. Some of the patients were markedly ill; others were able to do their

(7) Lancet, Aug. 21, 1915.

work. Twelve were admitted to the base hospital. In each of two cases one of the testicles was necrotic and removal was necessary. In ten cases there were signs of a mild inflammation of one or both testicles. The disease occurred in 13.8 per cent. of the men who had been living and sleeping in close contiguity.

The organism was found to be a streptococcus. Many of the porters had microfilariae in the blood; all of the hospital patients and sixteen of the others were so infected.

Blennorrhagic Orchitis. It is not rare to see testicles which have become red, swollen and painful from trauma. Gaucher, Bizard and Delcamp⁸ report two interesting examples of gonorrheal orchitis developing in traumatized testicles of patients who had had chronic urethritis for three and five years respectively.

Two soldiers were invalided from the front on account of trauma to the testicle by shell fragments—in one case the right and in the other the left. The involved organs were similar, in that they were red, swollen and difficult to palpate, not so much because of pain, but because of the extravasate in the scrotum. The temperature and the pulse were normal. The hydrocele gradually decreased until it was possible to palpate a nodule in the tail of the epididymis, characteristic of gonorrheal epididymitis. Examination disclosed enlarged and tender seminal vesicles, a morning drop, and enlarged prostates; but there was no evidence of any previous orchitis.

These cases demonstrate that it is not safe to assume that in the absence of febrile reaction a traumatized testicle is merely running the benign course of a contusion.

Dermoids of the Spermatic Cord. The cord is one of the rarest places for the location of dermoid cysts. Monti,⁹ after a careful search of the literature, was able to find but eight cases, to which he now adds another.

The patient was a well-nourished boy with an otherwise negative history. In the left inguinal region, just within the canal, was a bird's-egg-sized tumor, well-distended, and fluctuating, with a shiny surface and

(8) Presse méd., May 20, 1915.

(9) Wien. klin. Wochenschr., August, 1914.

sharply defined margins. The tumor mass emerged slightly from the external ring when coughing. The external genitalia otherwise were normal. A diagnosis of interstitial funicular hydrocele was made and excision advised.

Incision in the usual manner for a Bassini operation disclosed a pure white, opaque tumor, surrounded by cremasteric fibres. The cyst was easily shelled out and the canal closed.

The extirpated tumor measured 3.5 x 3.2 cm. Section disclosed fairly thick walls enclosing a cyst filled with sweatlike substance. The inner surface was smooth, with no prominences, and closely resembled skin in appearance. There was hair neither in the walls nor in the contents. Histologically, the wall was found to consist of the various layers of the epidermis and the derma.

SYPHILIS.

Alfred Fournier (1832-1914). During the excitement of the war raging in Europe, the death of Alfred Fournier, undoubtedly the greatest syphilographer of all times, passed almost unnoticed. His work, however, will stand as a monument to the master mind which labored for nearly fifty years in the cause of humanity in its struggle with the "peste moderne."

Darier,¹ who was a student of Fournier, pays to the memory of his master a beautiful tribute of admiration and respect, and gives a *résumé* of his works.

The first published work, "*Leçons sur le Chancre*," appeared in 1857. He differentiated the soft from the hard chancre, basing his conclusions on the results of auto-inoculation of the two varieties. In 1858, he stated that the rarity of the soft chancre on the face was due to a relative immunity to the virus of this region.

In 1863, at the age of 31, he became "*professeur agrégé*," taking as a subject for his thesis "*Uremia*." Following this, there appeared a series of monographs on *Diabétides*, *Herpes vacciniforme*, and *Eruptions dues à l'antipyrine*, of which he called attention to three forms: the palmar pseudosyphilide, the antipyrin roseola, and the black penis.

In 1866, he took up the subject of "*Blenorrhagia and its complications*." His vision in this field, however, was somewhat clouded. He admitted that the disease differed from a simple urethritis, but denied the existence of a special virus, and maintained that without having it one might give it to another. Later, however, he redeemed himself in being the first to describe blenorrhagic sciatica and the nodular form of arthritis deformans. In 1885-86, he gave the world the first

(1) *Ann. de dermat. et de syph.*, July, 1915.

description of spontaneous or metastatic blenorrhagic conjunctivitis.

In 1873, appeared the first edition of *Leçons sur la Syphilis étudiée plus particulièrement chez la femme*. In this he made such an exhaustive study of the primary and secondary indurations, and adenopathies, and of the visceral and functional manifestations that his critics accused him of seeing syphilis everywhere, which, of course, was perfectly true. As proof of this, one may cite his description of malignant secondary syphilides; recurrent roseolas; the sclerosing and gummatous forms of tertiary glossitis; gummas of the palate and pharynx; naso-cranial osteitis, and its grave consequences; tertiary lesions of the anus and rectum, and syphiloma ano-rectalis; syphilitic sarcocele, in which he distinguished the secondary epididymitis from the sclerotic and gummatous forms; syphilitic phthisis; and of the rôle played by syphilis in the production of aneurysms.

But it was in the realm of syphilis of the nervous system that Fournier made the greatest contribution to our knowledge of the disease. In 1879, appeared the volume on *Syphilis du cerveau*, followed shortly afterward by two others: *Ataxia locomotrice d'origine syphilitique* and *Période préataxique du tabes d'origine syphilitique*. His views concerning the syphilitic nature of tabes dorsalis met with violent opposition from such men as Professor Charcot, but even greater opposition developed when he announced, after ten years of intensive study, the syphilitic origin of general paralysis. The failure of these manifestations of the disease to yield to antisymphilitic treatment led to his doctrine of *affections parasymphilitiques*.

His brilliant work on *Syphilis héréditaire tardive* (1886) did much to clear up the diagnosis of obscure cases of hereditary syphilis. In *Origines de la syphilis*, he showed what a menace to society the disease is; with what alarming frequency *syphilis imméritée* occurs among wives, nurses, infants, physicians, and midwives.

In rapid succession appeared *Leçons sur les chancres extragénitaux*, and publications relating to *l'Évolution de la syphilis*. In 1906, appeared the work on *Syphilis*

secondaire tardive, which comprised an analysis of 19,000 cases. Three editions of *Traitement de la syphilis* appeared from 1893 to 1909. It was Fournier's intention to unite in one work all his teachings on the subject, and in 1898 appeared the first part of his great work: *Traité de la syphilis*. Later three other parts were published.

In a large volume on *Prophylaxie de la syphilis* (1903), he discussed at length the various means of combatting the spread of the disease. He had much to say concerning the moral and religious teachings, so respectable, but unfortunately so inefficient. To the day of his death he continued to fight the "danger social." He advocated abolition of prostitution, hospitalization of all cases, inspection of nurses, and education of the laity. He criticized the present venereologic methods in hospitals, and proposed numerous small dispensaries, obviating the publicity of the larger clinics. Especially did he insist on better instruction in syphilography, since it is upon the general practitioner that the public must depend largely for treatment and advice.

History of Syphilis. Much investigation has been made by men particularly interested concerning the probable time when syphilis as we now know it was first recognized. As the disease is one which frequently attacks the bones, it would seem that its history could be traced by means of an examination of the bones of ancient peoples. A very interesting résumé of his researches into the literature and the history of syphilis is given by W. A. Pusey,² and some of his findings follow:

"The history of syphilis is unique among the records of great diseases. For, unlike most diseases, it does not gradually emerge into the historical records of medicine as its characters become recognized, but appears on the stage of history with a dramatic suddenness in keeping with the tragic reputation it has made—as a great plague sweeping within a few years over the known world." Local genital diseases have been recognized from ancient times, numerous references to them occurring in

(2) Jour. Amer. Med. Ass'n., June 12, 1915.

both occidental and oriental literature, but no reference is made to a disease of this origin followed by constitutional symptoms, and prior to the last years of the fifteenth century no description of the syphilitic syndrome existed.

An epidemic of syphilis beginning in Italy and spreading rapidly over Europe is attributed to the soldiers belonging to the army of King Charles VIII. of France, who in the autumn of the year 1494 invaded Italy for the conquest of Naples. With the breaking up of this army and the scattering of the soldiers, the disease was spread over western Europe in a rapidly extending epidemic. It appeared in France, Germany, and Switzerland in 1495; in Holland and Greece in 1496; in England and Scotland in 1497, and in Hungary and Russia in 1499. Some points bearing on the interest excited by the new disease and the importance attached to it are the following:

In 1496, the Parliament of Paris declared that all persons infected with the disease should leave the city within twenty-four hours. In 1496-1497, prophylactic measures against the disorder were attempted at Nürnberg. On April 21, 1497, the town council of Aberdeen, Scotland, ordered that, "for protection from the disease which has come out of France and strange parts, all light women desist from their vice and sin of venery and work for their support, on pain, else, of being branded with a hot iron on their cheek and banished from the town." Six months after the Aberdeen order, the Scottish Privy Council passed an edict ordering all inhabitants of Edinburgh afflicted with syphilis into banishment to the island of Inchkeith, near Leith. In 1496, Grünpeck, a German writer, recorded the fact that English soldiers in Italy had acquired syphilis. The archives of the city of Bristol indicate that the disease was introduced there in 1498 from Bordeaux.

The disorder was named by the various countries after the country from which they were supposed to have received it. Thus, the Italians called it the Spanish or the French disease; the French called it the Italian disease; the English called it the French disease;

the Russians called it the Polish disease; the Turks called it the French disease; the Indians and the Japanese called it the Portuguese disease; and the first Spaniards who recognized the disease called it the disease of Española.

During the first few years of the epidemic, the disease presented severe symptoms and not infrequently terminated fatally. Within fifty years it assumed the milder course by which it has since been characterized.

In an examination of great collections of prehistoric, ancient, and medieval bones, not a single one presenting the characteristic lesions of syphilis could be found. This, taken in connection with the absence of any pre-Columbian documentary evidence of the existence of syphilis, is a strong argument in favor of its non-existence in the earlier times.

Among other proofs from the Spanish presented in a documentary form, the writer abstracts the important points from a book written by Dias, as follows: "Syphilis was unknown before the year 1493. It was brought by the crew of Columbus on his first voyage from Española, or Haiti." Dias called it "the disease of the island of Española," but also gave a number of native names for the disease. The majority of the crew of Columbus returned to Spain infected with syphilis, and Dias himself treated several syphilitic sailors from this squadron, among them the pilot, Pinzon of Palos.

The evidence of the American origin of the disease is given by the writer as follows:

"The bald fact of the sudden appearance of syphilis shortly after the return of Columbus from his first voyage might easily suggest and lend plausibility to the theory of the American origin of the disease. The presence of Spanish adventurers in Charles' army would furnish the connecting link between Barcelona and Seville and Columbus' crew and the Italian epidemic. But in addition to the chronologic sequence of Columbus' return from America and the first recognized epidemic of syphilis in Europe, there are numerous other facts which confirm the theory of its American origin.

"As we have seen, certain of these facts stand out prominently in the great epidemic:

"The disease at the time was recognized as a new disease. Names for it did not exist, and as it spread over Europe men were hard put to give it a designation. The same was true on its appearance in the Orient.

"The development of the great epidemic was definitely associated with the Italian campaign of Charles VIII., and its rapid spread over Europe was associated with the breaking up of his army. Its origin was recognized as being southwestern Europe. Even with the first outbreak in Italy, Spain was pointed to as the country whence it came, and the Spanish soldiers of Charles' army were incriminated as the authors of its distribution.

"The disease pursued a course of unusual severity and spread over Europe with the rapidity of an infectious disease among people unprotected by any previous infection with it."

Circular Chancres of the Prepuce Causing Phimosis. In a series of 180 chancres, Gaucher, Bizard and Bralez³ encountered seven lesions which encircled the prepuce in one of four ways. In the first variety, the chancre occupied the entire free border of the prepuce, with scarcely any invasion of the mucosa. The continuity was interrupted only by a few fissures. After the crust was removed, the lesion appeared in the form of a ring, and to the touch as a disc. Adenopathy was bilateral. In the second type, the fissures were numerous and broke the ring into segments. The third variety appeared as a half-moon in shape. The fourth variation was a series of small lesions, with intervening areas of normal skin.

All the cases gave positive Wassermann reactions. The phimosis was complete, owing to the rigid induration at the tip of the prepuce. No unusual therapeutic measure was employed except subsequent circumcision when necessary.

Vaginal Chancre. Fournier believed that very few of the reported cases of vaginal chancre were authentic.

(3) Presse méd., Nov. 4, 1915.

Of the 249 personal cases of primary lesions of the female genitals, he saw but one of the vagina. Rille, however, reported in 1904 a series of twenty-one cases, eighteen of which he had seen in two years.

Nielsen³ saw an unmarried servant girl, 29 years old, with an indurated ulcer of the vaginal wall. She had a four-year-old child, had never aborted, and had been pregnant for six months. The lesion had been present for seven or eight weeks, and had been followed by alopecia, rash, and headache. The organisms were found in the dark field.

The author thinks that the marked resistance shown by the vagina to infection by various organisms, and especially by *Spirochaeta pallida*, is due (1) to the resistant epithelium; (2) to the wide distensibility, which prevents traumatism; and (3) to the acid secretion.

Chancre of the Hard Palate. Fournier saw four cases out of a total of 727 chancres of the mucous membrane of the mouth. Morgoniner, Tschistjakows, Morrows, Taylors, Herzfeld, Ohmann-Dumensils, and Oppenheimes have each seen similar cases.

Björling⁴ saw a midwife, 33 years old, with an ulcer on the left side, associated with marked swelling of the regional glands. There followed a transitory rash, a sustained fever, and a positive Wassermann reaction. The patient had the habit of drawing the mucus from the mouths of new-born infants by means of a soft catheter, and at the point on the palate where the end of the catheter usually pressed the chancre developed.

Extra-Genital Chancres. A group of sixty-four cases in which the primary lesions occurred on the tonsil is recorded by Morton Smith.⁵ All of these cases have been observed by him during the past sixteen years. In this group were thirty-six males and twenty-eight females. The mode of infection could only occasionally be determined. Kissing is given by far the most prominent position, and next is the careless use of drinking glasses and eating utensils. Pipes, mouth-pieces of wind

(3) Derm. Wochenschr., February, 1915.

(4) Derm. Zeitschr., April, 1915.

(5) Jour. Cut. Dis., October, 1915.

instrument, the nursing-bottle nipple, hard candy that had been in the mouth of a syphilitic, cigar and cigarette stubs picked up and used soon after having been thrown away by the original users, the tonsillotome, Eustachian catheter, the common blow-pipe in factories (now no longer allowed), mouth-to-mouth insufflation of new-born babies, and other methods have been reported as the means of infection.

The enlargement of the near-by lymph glands is given as an important feature of diagnosis. The author states that the condition is to be differentiated from acute tonsillitis, peritonsillar abscess, Vincent's angina diphtheria, tuberculous ulcer of the tonsil, malignant disease, mucous patches, and gumma of the tonsil. The demonstration of *Spirochaeta pallida* by the dark-field illuminator, and the confirmation of the diagnosis at a later date by the complement-fixation test, are recommended.

As every dermatologic clinic annually has presented to it some cases of extra-genital luetic infection, the practitioner should always be on the alert for such cases. Many physicians are thus infected, and occasionally nurses and medical attendants are innocently infected. Gaskill⁶ records eleven cases. Three cases presented initial lesions about the anal region and the moral depravity brought out in examining these cases was striking. Three cases had lesions on the lip, one on the thumb, one on the thigh, and one on the wrist.

Prognosis of Extra-Genital Infection. Many writers have maintained that the course of syphilis following an extra-genital chancre is more severe than that resulting from a genital lesion. This contention, however, was not borne out by the statistics of Fournier, published in 1898.

Jean and Else Kottmaier⁷ report two cases which presented unusual features. One of the patients was a woman, 54 years old, who had had a cholecystotomy a few months previous to the onset of a severe rhinitis. A swelling developed on the left side of the nose, which

(6) New York Med. Jour., Oct. 25, 1915.

(7) Arch. Derm. Syph., April, 1916.

the patient nervously picked with the finger. There was constant discharge, interspersed with hemorrhage, sneezing, and pain. Syphilis was suspected and mercurial inunctions were instituted. About a year later, a swelling of the left side of the face appeared, together with a recurrence of gall-stones, which were removed. A section from the nose suggested a malignant neoplasm, and she was given a series of deep Roentgen-ray treatments.

About this time she came under the observation of the authors. There were perforation of the septum and partial destruction of the pharyngeal pillars and uvula. The tuberculin reaction was negative, and the Wassermann reaction a doubtful positive. She was given 0.4 salvarsan intravenously, after which the Wassermann reaction became positive. She was then given nine injections of 0.15 salvarsan. The reactions were so severe that it was impossible to increase the dose, nor could mercury be tolerated. Necrosis continued, gangrene developed, and the patient died of sepsis.

The severity of the infection in this case is not to be accounted for by the location of the lesion, but is due, in the opinion of the authors, to the fact that the woman was of advanced age, of lowered resistance, and that she developed a lesion from which the organisms entered directly into the blood stream, instead of being first filtered through the lymphatics. They maintain that a marked regional adenopathy allows of a favorable prognosis, regardless of the location of the chancre.

The second patient was a young man who acquired a lesion at the base of the tongue, unaccompanied by regional adenopathy, after a prolonged period of incubation. A papular exanthem appeared, which resisted combined salvarsan and mercury medication for six weeks, but finally yielded, and the patient continued his service in the army.

Medicolegal Aspect of the Incubation Period of Syphilis. The expert is frequently called upon to give his opinion concerning the probable date of exposure of a given case to infection, and also the time which has elapsed, or should elapse, between the begin-

ning of the initial induration and the appearance of the secondary manifestation of the disease.

Thibierge⁸ has carefully analyzed the available figures bearing on the subject, and divides the sources into two groups: (1) clinical observations of the date of exposure and that of the appearance of the lesion; (2) inoculation of normal individuals, particularly monkeys, for experimental purposes.

The most important statistics, both because of the number of cases and the care exercised in the observations, are those of Fournier, Sigmund, and Mauriac.

In a series of forty-eight cases, Fournier found the maximum to be seventy days, the minimum seventeen, and the mean thirty-one. Later, he changed the mean to twenty-five, after further observations.

Sigmund, in a series of 818 cases, found the figures to be as follows:

<i>Days.</i>	<i>Induration.</i>	<i>Ulcer.</i>	<i>Proportion.</i>
9 to 14	41	..	5 per 100
15 " 21	217	34	30 " "
22 " 28	207	87	37 " "
29 " 35	50	92	18 " "
36 " 42	19	51	9 " "
43 " 50	3	7	1 " "

In a group of twenty-seven cases of professional men and women, who were able to give exact dates, the figures were found to be these:

	<i>Induration.</i>	<i>Ulcer.</i>	<i>Total.</i>
Thirteenth day	3	1	4
Seventeenth day	11	8	19
Twentieth day	11	3	3
Twenty-first day	11	1	1

Sigmund asserts that the period is shortened in anemic and enfeebled individuals.

Mauriac reported ninety-one cases which he had studied with scrupulous care: two chancres appeared in from 8 to 10 days after coitus, preceded by a long continence; six in from 10 to 20 days; eleven in from

(8) *Ann. de dermat. et de syph.*, July, 1915.

20 to 30 days; twenty-two in from 30 to 40 days; twenty-four in from 40 to 50 days; eight in from 50 to 60 days; and nineteen in more than 60 days. The average period was from 34 to 35 days.

Metchnikoff and Roux found the average period for macacus monkeys to be twenty-three days. The author and Ravaut, working together, arrived at a similar result.

The author concludes that in the majority of cases the incubation period is to be found between the fourteenth and forty-second days; but inasmuch as from fifty to sixty days, or even ninety days, may elapse, it is impossible to arrive at a rigorously scientific solution of medicolegal problems involved in this question.

Involvement of the Eighth Nerve. Since shortly after the advent of salvarsan, the question of the involvement of the auditory apparatus has been largely discussed. It has been the opinion of many physicians that involvement of the eighth nerve occurred much more frequently following treatment with salvarsan than theretofore. This interesting question was discussed by Ellis and Swift,⁹ who found that early in syphilis, in a large number of cases recorded, involvement of the eighth nerve occurred more commonly than involvement of any other of the cranial nerves, and this whether the patient had been treated with salvarsan or with mercury. Habermann is quoted as having reported sixty-six cases of syphilis of the inner ear, of which thirty-four appeared during the secondary stage of the disorder. Of these thirty-four, three appeared some days before the outbreak of the skin eruption, and in only six was the ear disease noted later than ten weeks after the exanthem. Mayer is quoted as having reported sixty-five cases of acoustic paralysis, thirty of which occurred within the first year of syphilitic infection, and 20 per cent. in from three to ten weeks after the appearance of the primary lesion. All of these cases occurred before salvarsan was discovered.

Other case reports are given by Ellis and Swift showing involvement of the auditory apparatus early in

(9) Jour. Amer. Med. Ass'n., May 1, 1915.

syphilis independent of the use of salvarsan. These authors state that "the question of the frequency of syphilitic affections of the eighth nerve in the early stages of syphilis is intimately associated with the question of the etiology of the so-called nerve relapses, the paralyses of cranial nerves occurring in patients with secondary syphilis who have been inefficiently treated with salvarsan. The findings in the spinal fluid in these cases—increased cells, excess globulin, and usually a positive Wassermann reaction—have now definitely proved them syphilitic. The figures which are given above suggest that the great increase in frequency of such cases, which is claimed to have resulted from the use of salvarsan, has been exaggerated; but that the severity of these affections of the cranial nerves in early syphilis is rather markedly increased and somewhat more frequent in patients inefficiently treated with salvarsan seems to be an indisputable fact.

"Gennerich has studied carefully this phenomenon of increased severity in the relapses following salvarsan. He has pointed out that they hold equally for relapses occurring in the skin as for those in the nervous system. He considers that this increased severity in patients insufficiently treated with salvarsan is due to the absence of the resistance to local expansion of the syphilitic process, which usually develops in syphilitic subjects coincident with the appearance of the secondary eruption. This is the process which leads to the spontaneous regression of the primary lesion in untreated cases of syphilis. The absence of this resistance to local expansion of the syphilitic process in patients treated with salvarsan he ascribes to the rapid elimination of the mass of the infecting treponemes. If the case has been inefficiently treated, a few organisms will, however, remain in some foci difficult to reach with the curative agent. Such foci are frequent in the nervous system. The development of organisms remaining in such a focus in a patient treated with salvarsan takes place, therefore, rapidly in the form of an intense local infiltrating lesion, simulating a primary lesion in its development. From these relapsing foci, if the patient has no further

treatment, a fresh general infection of the body may again occur. Gennerich's explanation is a logical one and seems to account satisfactorily for the observed phenomena."

Seven cases are recorded each showing syphilis of the meninges involving the eighth nerve. All of the patients received energetic treatment, the number of salvarsan injections varying from five to fifty-seven to a patient, and of mercurial injections from four to thirty-eight. In Cases 1 and 2 of this latter group the patients were neurorecidives, who had had no definite meningeal symptoms before salvarsan was instituted, and both showed involvement of the facial nerve on the side of the affected ear. One had an optic papillitis at the time of the development of the deafness, and the other developed a similar condition a few months later. Both had general symptoms of an intense meningitis, and the cerebrospinal fluids were turbid and gave a high cell-count. In both there was complete restoration of the function of the involved nerves. Case 3 might also appear to have been a neurorecidive, except that the patient presented distinct symptoms of meningeal irritation before treatment was instituted. The deafness appeared one month after the injection of salvarsan, but cleared up completely after a second injection. Meningitis reappeared later, together with some hyperemia of the optic disks. Case 4 showed meningeal, auditory and optic nerve involvement at the time of appearance of the general secondary eruption. These symptoms were partially relieved by mercurial inunctions, and were entirely eradicated by a short course of neosalvarsan. Case 5 had severe meningeal involvement before the appearance of the exanthem. The symptoms slowly disappeared under mercury and iodides. Later two attacks occurred, showing involvement of the cerebral tract before the onset of deafness. In case 6 the patient developed deafness, vertigo, and visual disturbance while under mercury, with prompt alleviation of symptoms following a single intramuscular injection of salvarsan.

"Case 7 is an example of quite late involvement of

the auditory and abducens nerves, with beginning optic atrophy. The prompt relief of headache and improvement in hearing were quite striking, but in spite of prolonged and intensive treatment there was only slow improvement in the cerebrospinal fluid. This case illustrates well the resistance of the long-standing infection to treatment compared with the rapid improvement and return to normal of the cerebrospinal fluids of the patients treated in the early stages of the disease.

"These cases illustrate the relation of these disturbances of hearing to syphilitic infection of the central nervous system. Six of them showed definite evidence of extensive infection of the nervous system. The remaining case showed also definite signs of involvement, but here the process had not gone on to an extensive development. It is to be emphasized that in all of these cases the treatment previous to the onset of the affection of the eighth nerve had been quite inadequate. This is also the experience of many observers during the past three years. It has been shown conclusively that such lesions arise only in cases inefficiently treated, and that the number of such cases occurring in any clinic is an index of the efficiency of the treatment of syphilis in that clinic. Thus Gennerich, in the enormous syphilitic material in the Naval Hospital at Kiel, where the cases can be properly controlled and where the treatment is most thorough, has seen only two relapses of any kind during the past year.

"The cases here reported demonstrate, however, the large amount of treatment which may be necessary in these conditions, and the necessity of repeated examination of the spinal fluid for intelligent treatment of all syphilitic disease of the central nervous system. In these patients, except the three in whom the condition had been of long standing, all signs of disease of the eighth nerve rapidly disappeared. Examination of the spinal fluid in one of them showed, however, that the process was still active within the cerebrospinal axis. Such a process, if left to itself, is certain sooner or later to re-assert itself, resulting in severe and perhaps permanent damage to parts whose function is so important.

It may perhaps be interesting in this connection to refer to the frequency with which syphilis of the auditory nerve occurs as a manifestation of tabes dorsalis. In thirty cases of tabes which we have examined, 40 per cent. showed marked diminution of hearing in one or both ears, with diminution or complete loss of bone conduction for watch tick.

"In conclusion, we would urge the necessity for a consideration of all lesions of the eighth nerve as possible manifestations of a disastrous form of a general infection—syphilis of the central nervous system—and emphasize the value of an examination of the spinal fluid in every case of this type, and the necessity of repeated examinations of the fluid for the intelligent treatment and subsequent observation of all patients suffering with this serious condition."

Recurrence of Secondary Manifestations of Syphilis Three Years After Apparent Cure. During 1910, more than 1000 cases of syphilis were treated at the Rudolph Berghs Hospital in Copenhagen by Boas¹ after the Arning method, which consists in an intramuscular injection of 0.6 salvarsan, followed ten days later by 0.4 of salvarsan intravenously, combined with 50 inunctions or an equal number of injections of the salicylate of mercury. After four years, most of these patients are clinically and symptomatically cured. Among these, there were four re-infections.

In 1911, a young servant girl was treated in the usual way for secondary syphilis. Before the treatment, the Wassermann reaction was strongly positive, but after the treatment was completed the reaction became negative and remained so when tested at monthly intervals. Three years later, she was seen with excoriated papules about the external genitalia, and the Wassermann reaction was again strongly positive. Against the diagnosis of a re-infection were the absence of induration, of indurated edema, of inguinal adenopathy, and the presence of a strongly positive complement-fixation. The case must be considered as a late recurrence in a supposedly cured patient.

(1) Derm. Zeitschr., February, 1915.

Congenital Syphilis of Infants. Soldin and Lesser² call attention to the importance of testing the blood of mothers of infants who show symptoms suggestive of syphilis, such as stump-nose, scaling eczemas, and enlarged liver and spleen, but whose sera are negative to the Wassermann reaction. They report five such cases. The blood of all the mothers reacted positively. Systematic investigation of syphilitic families has demonstrated that in about one-half the cases of congenital syphilis the disease remains latent, or passes unnoticed, during the first year of life. The necessity of making an early diagnosis, in order to prevent the development of keratitis, juvenile tabes, and other manifestations, is great, and therefore the examination of the blood of the mother should never be omitted.

Pathology of Syphilis. A brief review of some of the deductions made from recent work in the pathology of syphilis is given by Fordyce.³ He states that the infectious diseases as we now understand them may be divided into two general classes: those due to bacteria proper, and those arising from the invasion of the tissues by the higher organisms of the protozoal type. It is to the latter class that syphilis belongs.

It has been shown in animals that during the time that the body harbors one or another of these protozoal organisms it maintains a state of immunity against re-infection. On the other hand, when it has been completely freed from the parasite, the immunity promptly disappears and it is quite as susceptible to a second infection as it was to the first. Syphilis in man probably presents an analogous condition, immunity to re-infection existing only so long as the organisms remain in the tissues. Immunity to infection, therefore, is evidence that an infection has previously occurred and that the tissues still harbor the organisms. This fact explains the laws of Colles and Profeta. The mother of a syphilitic infant is immune to external infections because she is already the host of syphilitic organisms. The child of a syphilitic mother is immune

(2) *Deutsch. med. Wochenschr.*, April 8, 1915.

(3) *New York Med. Jour.*, Feb. 27, 1915.

for the same reason. In either case, the apparently immune individual may show no symptoms of the disease for long periods of time, the organisms remaining in a latent stage in the tissues. At any time during this latent period fresh lesions of the skin or mucous membranes may develop, but at no time is the individual susceptible to fresh extraneous infection.

The local immunity of the skin and mucous membranes to outside infection in these cases, while they remain susceptible to fresh attacks of the parasite already present in the infected person, is an occurrence which is difficult to explain. The first theory offered to account for it is that there is a gradual weakening of the antibodies originally formed against the infecting organisms, and that when this progresses sufficiently far the remaining organisms multiply and are thrown into the circulation in large numbers to find lodgment in the integumentary tissues. The second theory postulates the development by the surviving organisms themselves of a certain degree of immunity toward the antibodies produced against them by the tissues of the host. This latter explanation finds some support in the observations made on animals infected with other forms of protozoa. In such animals, the blood is found to be lytic or otherwise destructive to fresh organisms introduced *from without*, but is unable to destroy the organisms harbored by the animal from which it was derived.

The different character and the more general distribution of the lesions occurring in the so-called tertiary and secondary periods are explained on the ground of the development by the tissues of an anaphylactic state toward the presence of the organisms. This state of abnormal susceptibility carries with it greater friability of the tissues, so that their invasion by the parasites is followed by more extensive necrosis and destruction. The precocious development of such a state of anaphylaxis suffices to explain the cases of florid and malignant syphilis more satisfactorily than the assumption that the invading organisms are inherently more violent than usual. Further, there is evidence that the incomplete treatment of syphilis in the early stages

hastens the development of this anaphylactic state. Partially treated patients show in general an earlier development of tertiary lesions than do wholly untreated individuals.

The explanation of the altered course of syphilis since the introduction of salvarsan and neosalvarsan is based on the above theory.

Among the lesions which are important during the so-called latent stage of the disease are those of aortitis and meningitis. The latter has been shown to be a very common development in the course of syphilitic infection; it is exceedingly difficult to cure, and it is associated with an occlusion of the vasa vasorum of the aorta, so that the organisms are little accessible to the drugs introduced into the blood-stream. Meningitis, the other common lesion in this stage, is characterized by an obliterating endarteritis. While invasion of the central nervous system probably takes place quite early in the disease, symptoms are not evident for many years. The earliest lesion in this region occurs in the perineurial and perivascular lymph-spaces in the posterior nerve-routes. It is the direct result of extension from the small arteries to the perineurial lymph-channels, with which they are in direct communication. The invasion occurs first along those nerve-routes which are subject to most irritation. These supply the tonsils and the internal organs of vital importance. This posterior route lesion occurs first between the posterior ganglion and the spinal cord, and is probably the earliest stage in the development of tabes. The lesion slowly progresses inward to involve the meninges and the posterior columns of the cord. The early involvement of the posterior route region in tabes and spinal syphilis has been thought to be in the nature of a local anaphylactic response on the part of the cells in this region, which were sensitized through their immediate lymphatic connection with the nutrient arteries. In paresis, the lesion is dual—the simultaneous or successive involvement of the cerebral meninges and the brain tissue itself, with the development of an encephalitis.

The writer states in conclusion that, "regardless of

the site of the syphilitic lesion or the stage of the disease in which it makes its appearance, it is always typically of the same nature, namely, a lymphocytic, perivascular infiltration, associated with an obliterating endarteritis."

The Spleen in Syphilis. A study was undertaken by Wile and Elliott⁴ of cases in which the spleen was involved in early syphilis. They state that considering the uniformity with which the entire lymphatic system is attacked early in the course of acquired syphilis it might be naturally expected that the spleen as well as the other lymphatic structures would take part in this general hyperplasia. From their study of the literature, however, involvement of the spleen is found to be of rare occurrence. As a further result of their study, they conclude that splenic enlargement in early syphilis is not rare, but that it is a subject that has received very little study.

In their study, 100 cases were examined; definite splenic enlargement was found in thirty-six. The spleen was noted as being hard and firm in seventeen cases; in six it was tender, and in three very soft. Of the thirty-six positive cases, the general health was definitely affected in twenty-seven; severe involvement of the general health was found in four cases; in other words, 78 per cent. of those cases in which the spleen was enlarged were cases in which the general health had suffered considerable deterioration; while, on the other hand, in cases in which the spleen was not affected, the general health was impaired in only 22 per cent. of cases.

From the result of their studies, the authors conclude as follows:

1. Acute splenic enlargement occurs in a large number of cases of early syphilis.
2. This enlargement may be present before the secondary manifestations are apparent, and probably represents the earliest syphilitic visceropathy.
3. The enlargement is either in the form of a soft tumor, not unlike that of any other infection, or may present itself as a firm, tense tumor.

(4) Amer. Jour. Med. Sci., October, 1915.

4. In a small proportion of cases, tenderness, occasionally extreme, may be present.

5. The enlargement is most frequently found in those cases in which the general health has been seriously involved.

6. Acute splenic enlargement in early syphilis tends to disappear under treatment, but may persist and resist treatment longer than any other early manifestation.

7. A striking finding was the frequency with which the splenic enlargement was noted in association with early central nervous manifestations.

8. In no case in their series was the spleen tumor associated with enlargement of the liver.

DIAGNOSTIC METHODS.

The Diagnosis of Syphilis. In a review of modern diagnostic methods in syphilis, Fordyce⁵ states that our present methods of diagnosis are those applied to the demonstration of *Spirochaeta pallida* in a suspected lesion, the reaction of the blood to the Wassermann test, the findings in the spinal fluid, and the cutaneous or luetin test. He further emphasizes the value of careful clinical training, in order properly to interpret these findings. Thus, clinical observation and laboratory findings supplement each other. With our ability at present to demonstrate *Spirochaeta pallida* by the dark-field illuminator, or by various staining methods, it is no longer excusable to delay the treatment of syphilis until corroborative evidence in the form of a generalized eruption occurs. Furthermore, the early recognition of the infection before it has become generalized offers a much better chance for a rapid and certain cure of the disorder.

Summary: "The Wassermann reaction is one of the most important symptoms of syphilis, the interpretation of which can come only from experience—prolonged experience and careful comparison of laboratory results with clinical observation. There is great necessity for the standardization of the technique. All modifications

(5) New York Med. Jour., Sept. 26, 1914.

introduced up to the present time have proved inferior to the original method and can not therefore supplant it.

"A positive Wassermann is pathognomonic of a luetic infection with the following reservations: Partial or transient complement-fixation is sometimes seen in leprosy, yaws, and cachectic states, but it is obvious that, with the exception of leprosy, which is the only disease to present any perplexity in this climate, the clinical diagnosis would offer no difficulties. In the cases of leprosy which have come under my observation, the reaction does not occur uniformly, some cases giving the reaction at one time and not at another, or negative and indeterminate with one antigen, while inhibition may be complete with another. An indeterminate or weakly positive reaction is of value as an indication for treatment, but is of little importance for diagnosis unless as a concomitant of other symptoms, when it may in many cases be brought out by a provocative injection of salvarsan.

"In interpreting negative reactions, one must bear in mind that they may occur with limited tertiary affections, in old infections with the disease limited to the central nervous system, and in women with repeated abortions, or syphilitic children in whom the infection is remote or has been treated. Alcohol, taken prior to the test, will sometimes prevent the fixation of complement; individuals who are addicted to its use should therefore abstain for several days before the blood is to be examined.

"In the primary period of syphilis, every effort should be made to establish a positive diagnosis. If the dark-field examination is negative and the clinical picture doubtful, repeated Wassermann examinations should be made, as they are usually positive before the outbreak of the secondary rash.

"The Wassermann is positive in the secondary stage in 100 per cent. of cases, and is of value in differentiating between early syphilitic eruptions and dermatologic affections which simulate them. In the latent stage, it is a valuable guide to the effect of treatment. It is

impossible at the moment to give the percentage of cases which will remain refractory to treatment and to say to what extent we are justified in continuing to treat such patients.

"Untreated tertiary cases with manifest symptoms give a positive reaction in from 95 to 100 per cent. of cases. The test is here of diagnostic import in differentiating luetic affections from tumors or other surgical conditions, and supplies the etiology in cases of repeated abortions where no history of syphilis is obtainable.

"The provocative reaction is of great aid in cases with suspicious lesions and a negative reaction. It should be applied in all treated cases in which the reaction has been negative for a period of a year or more, to determine if a cure has taken place. If it becomes positive, there is an indication for renewal of treatment, and if it remains negative the provocative should be repeated within a year, following the policy of Gennerich.

"All patients with symptoms pointing to involvement of the central nervous system should have a lumbar puncture, as well as the latent cases with persistent positive reactions, to determine if there is a latent process in the cerebrospinal system. The puncture is of value, not only in making a differential diagnosis between various neurologic diseases, but as an index of the activity of a syphilitic process and a control of the effect of treatment.

"The findings in syphilis of the nervous system are as follows: In tabes, the reaction in the blood is positive in 60 to 70 per cent. In the spinal fluid, Phase 1 and lymphocytosis are usually marked in about 100 per cent. of well-developed cases with active manifestations. The Wassermann is positive with larger amounts of fluid, and about 20 per cent. give a reaction with 0.2 c.c. or less. In the early forms of the root type, the serologic picture may be practically negative. Whether these cases will give positive findings later on, only further observation and time can tell. In the degenerative forms, where all activity has subsided, the results are negative.

"In tabeto-paresis and paresis, the picture is about

the same, i. e., a positive reaction in the blood in about 100 per cent. of cases; in the fluid, a positive Phase 1 and a variable lymphocytosis with a positive Wassermann in larger amounts in 100 per cent., and with 0.2 or less in about 95 per cent.

"In cerebrospinal lues, the reaction in the blood is positive in 70 to 80 per cent., Phase 1 is usually positive, pleocytosis is variable, complement-fixation is positive in larger amounts, a smaller percentage fixing with 0.2.

"In cerebrospinal arteritis, the blood may or may not give a positive reaction. The findings in the fluid may all be negative, excepting the globulin reaction, unless there is an accompanying meningitis."

Cholesterinized Antigens. All workers agree that cholesterinized antigens are more sensitive than others, and as they are more available they become important additions, provided they prove equally reliable. A word of precaution has been spoken by several writers, in view of the possibility of getting positive reactions in non-luetic cases by reason of their sensitiveness. The fact remains, however, that many cases definitely proved to be luetic have reacted positively with these antigens when negative reactions were obtained with the older antigens. Their value seems to lie particularly with treated cases that still harbor a moderate amount of infection, sufficient only to react positively with sensitive antigens. These cases may respond negatively to the ordinary antigens, thus giving the patient and his physician a false impression as to the danger still present.

A plan now followed by many is to use in all cases two or more antigens, and thus have them act as checks on each other in interpreting results. A careful study of this subject has been made by Kolmer and Schamberg.⁵ In their experience cholesterinized alcoholic extracts of normal heart constitute more sensitive antigen in the Wassermann reaction than alcoholic extracts of syphilitic liver and extracts of acetone-insoluble lipoids. The latter extracts are superior to alcoholic extracts of

(5) Amer. Jour. Med. Sci., March, 1915.

syphilitic liver, and rank second to the cholesterinized extracts in antigenic sensitiveness.

Of forty-one cases reacting only with cholesterinized antigens, no less than twenty were known definitely to be syphilitic, and in at least fourteen the diagnosis of lues was most probable. In other words, in thirty-four, or about 83 per cent. of the cases, the positive reactions with the cholesterinized extracts were in all probability correct and an expression of continued spirochetal activity, even though the reactions with alcoholic extracts of syphilitic liver and acetone-insoluble lipoids were negative. What is of great importance is the fact that if these extracts had not been used either a diagnosis of syphilis would not have been made, or treatment would have been interrupted before spirochetal activity had ceased.

The authors believe that cholesterinized extracts are best employed in conjunction with non-cholesterinized extracts in performing the Wassermann reaction, and very slight positive reactions with the cholesterinized extracts should be interpreted in conjunction with a clinical study of the patient. With a person known to be syphilitic, these slight reactions are to be interpreted as positive and as an indication for further treatment.

The large number of negative reactions with cholesterinized antigens and the serums of persons in good health or those known to be suffering from non-luetic conditions is evidence that false positive or pseudo-reactions with these extracts are rare.

In using cholesterinized antigens, it is not advisable to work with single units of complement and amboceptor, because of the well-known anti-hemolytic properties of cholesterol, and the corresponding increased likelihood of obtaining false reaction.

Cholesterinized alcoholic extracts of heart are easily prepared and are quite stable. It is advisable, however, to retitrate them at frequent intervals, as is usual with other antigens.

Cholesterinized alcoholic extracts of human heart are probably better than those of beef and guinea-pig heart.

The latter extracts are particularly prone to become anti-complementary.

Cholesterinized extracts constitute the best antigens when the treatment of syphilis is being guided by the Wassermann reaction, because they are the most delicate and serve to indicate spirochetal activity after the reactions with alcoholic extracts of syphilitic liver have become negative. It requires more treatment to extinguish the Wassermann reaction when cholesterinized extracts are employed. This result, however, can be achieved, and when the reactions so performed continue to be negative the test constitutes the best evidence of the cure of syphilis that we possess.

In view of the widespread use of cholesterinized antigens, a communication by Henes⁶ concerning the possible effect of cholesterin in the blood on this reaction is of interest. The writer states that considerable work has recently been done to determine the pathologic conditions increasing the cholesterin content of the blood, and further that sufficient data is at hand safely to say when either a hypercholesterinemia or a hypocholesterinemia may be expected; and further, that no attention has been paid to these facts in interpreting the results of the Wassermann reaction.

In diabetes, nephritis, cholelithiasis, icterus from any cause, obesity, and arteriosclerosis, profound changes in the cholesterin content of the blood exist, and it is on this account that attention to this subject is called by the reporter. The writer summarizes as follows:

"1. The cholesterin content of the blood varies considerably under various pathologic conditions. Placing the normal cholesterinemia at 0.00150 gm. per cubic centimeter of serum, variations between 0.0004 and 0.0102 gm. per cubic centimeter have been encountered, the latter, as far as I know, the highest figures ever recorded.

"2. We are in a position to know when a hypocholesterinemia or a hypercholesterinemia can be expected.

"3. The addition of cholesterin to the antigen of the

(6) Jour. Amer. Med. Ass'n., June 12, 1915.

Wassermann reaction increases the rapidity and intensity of hemolytic inhibition.

"4. Serologists have failed to take into consideration the pathologic variations of the blood cholesterin in interpreting the Wassermann reaction.

"5. Syphilis, in itself, is not primarily responsible for a hypercholesterinemia.

"6. Hypercholesterinemia, in itself, does not give a positive Wassermann reaction."

Henes presents these theoretical conclusions:

"The lipid content of the blood serum determines the intensity of the biologic reaction employed in the diagnosis of syphilis. Cholesterinemia and lipoidemia have been shown to follow parallel curves. We are justified in assuming then that cholesterin determines the intensity of this reaction. Having been shown that cholesterin in the antigen does intensify the Wassermann reaction, why should the cholesterin of the blood serum be utterly disregarded? Just because the cholesterinemia shows such marked fluctuations under various pathologic conditions, and such marked fluctuations in the course of certain diseases (infectious diseases, nephritis) and certain physiologic processes (pregnancy), the serum cholesterin must be taken into consideration in the interpretation of the Wassermann reaction, whether cholesterinized or non-cholesterinized antigens are used.

"The nearer the blood cholesterin approaches the normal in any given case, the stronger is the Wassermann in that case. For example: A + + + + Wassermann with a normal cholesterinemia (not taking conditions of hypocholesterinemia into consideration) should be interpreted, according to our present-day standards, as the strongest reaction. A + + + + reaction with a hypercholesterinemia is a weaker reaction than a + + + + with a normal cholesterinemia. A + + + + reaction with a marked hypercholesterinemia is no stronger than a + + with a moderate hypercholesterinemia. A + + + + reaction in a chronic nephritic is something less than a + + + +. It is the hypercholesterinemia of an icteric serum that often interferes

with the reading of a Wassermann reaction. Failures or discouragements in our antiluetic therapy, as judged by the Wassermann reaction, may be due to certain hypercholesterinemias in individual cases. Surely there ought to be some difference in the Wassermann reactions of bloods which show respectively a cholesterinemia of 0.0007 and 0.00463 gm. per cubic centimeter of serum; and yet these two actual extremes gave a + + + + reaction, and we call them the same and judge them in the same way.

"Finally, our interpretation of a positive Wassermann reaction would be much more accurate if we, jointly, would take the cholesterinemia into consideration. That does not, of necessity, mean that a quantitative cholesterin determination should form part of the Wassermann reaction; but those clinical factors which we know influence the cholesterinemia should most certainly be recognized and considered."

Variations in Wassermann Reactions. All workers are in agreement that in the different stages of syphilis the percentage of positive Wassermans varies to a marked degree. In the first stage, a positive reaction may not appear for some weeks, although in certain instances the test becomes positive within one week; and whereas in the so-called second stage of the disease a large proportion of all cases give a positive reaction, the percentage of positives decreases in the so-called third stage, while in latent syphilis it falls still lower.

Another factor is the question of treatment. This may have a bearing on the Wassermann result and should always be taken into consideration in interpreting the test. Further, as pointed out by Nichols and Craig, the reaction may be temporarily placed in abeyance when the patient has ingested a considerable amount of alcohol. Tests on sera which have been contaminated with bacteria are also unreliable, and all these factors occur independently of the various possibilities of error in technique in the laboratory itself.

Another important feature is the fact that the serum of a given patient, examined by the same observer, with identical method, may vary from day to day, even

when the patient is not under treatment. This important point was brought out by Craig,⁷ who has published an important paper giving a summary of the present status of the Wassermann test in the diagnosis and as a control of the treatment of syphilis, together with data of practical value derived from his personal experience with the test. The statistical part of his paper is based upon over 18,000 tests personally performed during the five preceding years. He views a positive Wassermann reaction as a symptom of syphilis, and states that so long as it is present either in a test of the blood or spinal fluid the patient can not be considered cured; and, further, that a positive Wassermann, if persistent, indicates the presence somewhere in the body of living spirochetes, and that even an evanescent positive result called forth by the so-called provocative treatment proves the existence of syphilis. Recognizing the many inaccuracies that occur which have brought disrepute upon the test, he still believes that when properly performed it is hardly equaled in practical value by any other diagnostic method.

In abstract, the writer's results and opinion are as follows:

Technique: Of the well-recognized methods, one performed by a thoroughly trained serologist, who has had a wide experience in the method he employs, will give approximately as good results as any other method. The results obtained with the original Wassermann method do not seem to be superior to those obtained with other well-recognized methods, provided those using the latter methods are skilled in their use. The technique employed in this work is essentially that recommended by Wassermann, except that a human hemolytic system is employed instead of the sheep system. As antigens, an alcoholic extract of fetal syphilitic liver has been used all of the time, and for the past two years a cholesterinized alcohol extract of normal human heart. Very little variation was observed in the results with the two antigens, the cholesterinized extracts appearing to be just as valuable as the antigens of extracts

(7) Amer. Jour. Med. Sci., January, 1915.

of fetal syphilitic liver, and they are much more easily and readily obtained than the latter.

Concerning the specificity of the test, there are only a few diseases other than syphilis that give a positive Wassermann result with any regularity, and these are yaws, relapsing fever, leprosy, and the febrile stage of certain malarial infections. Among 2,643 individuals suffering with diseases other than syphilis, only eleven (0.4 per cent.) positive reactions were obtained. In four of these malaria was present, the test becoming negative on the disappearance of the fever. Of the other cases, three were diagnosed as tuberculosis; in one the diagnosis was undetermined; and in three the diagnosis of pityriasis rosea was made. In the latter cases the reaction obtained was only one plus, and in two of the tuberculosis cases a history of syphilitic infection was afterward obtained. All three patients recovered under antisymphilitic treatment.

Among the 2,643 individuals tested, there occurred a large number of both acute and chronic infections, as well as functional and organic diseases of various kinds, and in view of the very small percentage of positive results above mentioned in non-syphilitic conditions the specificity of the test is strongly favored.

An accurate idea of the results in the various stages of syphilis as it was obtained in 4,658 cases may be gained from the following table:

<i>Stage.</i>	<i>Total Cases.</i>	<i>Positive</i>	<i>Negative.</i>	<i>Percentage Positive.</i>
Primary	908	813	95	89.5
Secondary	1,889	1,817	72	96.1
Tertiary	638	558	80	87.4
Latent	1,173	790	383	67.3
Congenital	28	25	3	82.2
Parasyphilis ..	22	15	7	68.1
Totals	4,658	4,018	640	86.2 Avg.

In explanation, it is said that in practically all the negative cases above noted only one test was made, and that probably the positive percentage would have been increased had the tests been repeated. In secondary

cases, when the Wassermann is repeated, practically 100 per cent. show a positive reaction.

The date of appearance of the Wassermann reaction: An unusually high percentage of positives in the first stage was obtained. The following table represents the results in 575 cases examined:

<i>Week after appearance of Chancre.</i>	<i>Total Cases.</i>	<i>Positive.</i>	<i>Negative.</i>	<i>Percentage Positive.</i>
First week	76	26	50	34.2
Second week	149	86	63	57.7
Third week	151	102	49	67.5
Fourth week	159	121	38	76.1
Fifth week	40	32	8	80.0

It appears from the above figures that the value of the Wassermann in the early stage is great, and that in all cases in which the demonstration of *Spirochaeta pallida* can not be made by the microscope the Wassermann test should be performed.

The chief factors that markedly influence the result of a Wassermann test are the variation in the amount of complement-inhibiting substances in the patient's blood serum; the ingestion of alcohol; the growth of various bacteria in the blood serum; and the amount of serum tested. The variation in the amount of complement-inhibiting substances from day to day, even in the absence of treatment, was well shown in a study of ten patients (prisoners) at the United States Military Prison at Fort Leavenworth. Of these, two were in the primary stage, four in the secondary, and four in the latent stage of the disease. The patients were not under treatment and were under identical conditions in every respect. Blood was collected each day from each patient, and the result of the test demonstrated conclusively a normal variation.

In brief, in one case of primary syphilis a plus or doubtful reaction was obtained on three of seven days; on the other four days it was two plus, or positive. In another primary case, a one plus or doubtful reaction was obtained on two of seven days and a positive reaction obtained on five days. In one case of secondary

syphilis, a negative reaction was obtained on one day, a plus minus on one day, a plus on three days, and a positive or two plus reaction on two days. In another secondary case, a plus or doubtful reaction was obtained on two of seven days. In two secondary cases, a positive result was obtained on every day of the week during which the serum was tested. Of the latent cases, one gave a plus minus reaction on two days, a plus reaction on four days, and a positive reaction on one day. Another gave a negative reaction on one day, a plus minus on another, and a plus reaction on three days. The third latent case gave a plus or doubtful reaction on three of seven days, while the fourth case gave a doubtful reaction on all but one day of the week. All of these cases subsequently gave positive reactions repeatedly.

These observations seem to indicate that whatever are the substances in syphilitic serum that produce complement inhibition, they must be present in a certain amount before a positive Wassermann reaction can be produced, and that the amount varies in such sera from day to day, even in untreated cases; and the important fact is brought out that in untreated syphilitic infections the result of the Wassermann test may vary all the way from a positive to a negative within a short period of time, and with the usual amounts of blood serum used in the test.

These observations demonstrate the uselessness of a single negative reaction, as several of these patients gave negative reactions on certain days who had previously and subsequently had positive reactions, the changing results not being dependent upon treatment. They further emphasize the fact that a negative result obtained in the presence of positive clinical manifestations suggests further tests.

[This variation could account for discrepancies obtained in various laboratories when the serum has been withdrawn on different days, but of course would have no bearing on tests made using serum drawn from one puncture.—Ed.]

Concerning the influence of the ingestion of alcohol, it was found that the latter, either in the form of beer

or whiskey, as well as alone, and in amounts varying from 180 to 240 c.c. of whiskey, 90 c.c. of 95 per cent. alcohol, and 700 c.c. of Munich beer, was capable of rendering a positive reaction negative, and that the reaction remained negative for several hours after the last dose of the alcoholic liquor, and, in one case, as long as three days. In three of the nine cases experimented upon, the reaction remained negative for twenty-four hours after the last dose of the alcoholic liquor.

In all the patients tested, the Wassermann reaction was double plus positive before the administration of alcohol, which means, according to this observer, complete inhibition of hemolysis, while a few hours after the administration of alcohol the reaction became negative.

Concerning the effect on the test of the growth of bacteria in the serum, it was found that normal serum, when sterile, never gave positive reactions, even when kept at room temperature for as long as a month, provided they were inactivated by heating at 56° C. for one-half hour before testing; and further, that normal sera contaminated with streptococci and staphylococci might give a positive reaction when the sera were kept at a temperature of 37 C. for 24 hours or longer. It was further ascertained that not all strains of these pyogenic organisms produced a positive reaction. From the practical standpoint, these observations are important.

From the writer's experience he believes that the largest percentage of positive results are obtained when the maximum amount of blood serum allowable with the particular method employed by the serologist is uniformly used, and that doubtful or negative reactions are of no value when based on a result obtained with smaller amounts of serum.

[This entirely coincides with the opinions of others, notably Boas, who uniformly uses several amounts of serum in his tests.—Ed.]

The Provocative Wassermann Test: The writer is in accord with other observers who believe that a valuable addition to our diagnostic methods has been made in

this test. After the administration of a small dose of salvarsan a positive reaction may occur in the blood during the first forty-eight hours, or it may be delayed from three to seven days or longer. In order to be of the most value, the test should be made daily or every other day for at least a week. Out of eight patients who had been thoroughly treated and had presented a negative Wassermann reaction for many months and were supposed to be cured, four gave a positive reaction after a provocative injection of salvarsan, and four remained negative. The writers states that "in patients who have presented a negative Wassermann reaction for a period of over a year, and in whom symptoms have been absent, a provocative Wassermann test often results positively, thus proving that spirochetes are still present and that the disease has not been cured." He therefore urges the more general employment of this measure, particularly in primary, tertiary, and latent cases. The amount of the drug to be employed may be small, and it acts both as a therapeutic and diagnostic measure.

The following rules are given by the writer as being reliable in governing the interpretation of the Wassermann test, and were derived from his experience with the reaction in many thousands of cases:

"1. If the diseases other than syphilis that have occasionally been found to give a positive reaction with the Wassermann test can be excluded, a double-plus reaction (absolute inhibition of hemolysis) is diagnostic of syphilis. Under such conditions, I consider the reaction as absolutely specific, whether symptoms are present or not, and whether there is or is not a history of infection.

"2. Under the same conditions, a plus reaction (one in which there is at least 50 per cent. of hemolysis) may, in primary, tertiary, and latent infections, be interpreted as diagnostic, provided there is a clear history of infection or clinical symptoms present. In the absence of either history or suspicious symptoms, a plus reaction should never be considered as diagnostic.

"3. A diagnosis of syphilis should never be made upon a plus-minus reaction (one in which there is less

than 50 per cent. of hemolysis). Many normal individuals give such a reaction, and it is of no value whatever as a diagnostic sign of syphilis, and of very little value as a guide to treatment.

"4. A single negative reaction is of no value in excluding syphilis. That this is true is clearly demonstrated in the titrations of the blood serum of syphilitic patients already mentioned, where even the most severe secondary cases occasionally gave a negative reaction. Only when a negative reaction is repeatedly obtained, over a period of at least a year, can it be considered as good evidence of the disappearance of the disease, and in all such cases the result of the test on the cerebrospinal fluid, a luetin test, and a provocative Wassermann test should be made, if one desires to be sure of the absence of syphilis. This may appear to be a very radical stand regarding the value of a negative Wassermann test, but my experience has shown that only by applying all of the tests mentioned can we be sure that a patient is really free from infection."

Contradictory Reports on the Wassermann Reaction. Many excellent articles have appeared on this subject within the year, and some of the problems that have been matters of great concern to the men who treat syphilis have been carefully studied. Contradictory findings made by independent serologists on the same serum have been of such frequent occurrence that the value of the test has even been doubted. After careful study of all the factors, and taking into consideration the proved possibilities of error, the test still remains of the utmost importance, both as a method of diagnosis and of determining the probable continuance or eradication of the disease. The use of more sensitive antigens has also added somewhat to the complexity of the situation; but when these factors are analyzed in various cases and their limitation recognized in specific instances, they must be considered an addition to the technique, and their employment will undoubtedly be continued. Most of the investigators mentioned in the review which follows urge that this test alone should not be considered the determining factor, but rather as corroborative evi-

dence. It therefore appears that, notwithstanding the many apparent inaccuracies which the physician detects who relies on various serologists to perform the test, the test itself has done much to increase our knowledge of the disease and will remain an important factor in the recognition and management of syphilis. Its limitations, however, must always be borne in mind.

Bearing on the question of contradictory findings, an illuminating study has been presented by Wolbarst.⁸ In a previous report, covering thirty-seven cases, this writer recorded the following findings:

The blood was taken simultaneously in two test tubes and sent to two different serologists, with the following result: Total agreement of findings, twenty-six cases (70 per cent.); slight disagreement, six cases (16 per cent.); absolute contradiction, five cases (14 per cent.). The variation, therefore, is seen to be from 14 to 16 per cent. where more than one serologist reports on a given serum. The present paper is based on a careful study of 134 private cases, and the conditions under which the tests were made were those under which the average practitioner obtains his Wassermann results. In the beginning of the study, forty-nine cases were thus tested by two laboratories; later eighty-five additional sera were sent to three laboratories, each working independently of the others.

The method employed was to withdraw the blood through a sterile needle into three sterile test tubes. Within a few hours, these tubes were delivered to the laboratories, the time elapsing between the time of withdrawal of the blood and delivery to the laboratories being never more than six or seven hours, and in the interval the specimens were kept in an icebox. The three serologists were selected with care and were competent men. It is stated that in the first laboratory nearly 20,000 tests had been made in the year 1913, and approximately 40,000 during the year 1914, and the work was carried out by specially trained laboratory assistants. In this particular laboratory a slight change in technique was made, in that their method was to bind

(8) Interstate Med. Jour., February, 1915.

complement for a period of four hours at icebox temperature, instead of the usual one hour in the incubator at 37° C. This particular laboratory was able by this means to obtain at least 10 per cent. more positive reactions in latent lues than by the original method. In the second laboratory, the serologist was the author of a text-book on serology, and had personally performed 50,000 Wassermann tests, of which 7,500 were on spinal fluid. From the standpoint of experience, therefore, it appears that this laboratory was quite capable of correctly carrying out the technique. In the third laboratory, the serologist had performed almost 8,500 tests, 2,500 of which were made in the year 1914. All the laboratories employed regularly recognized technique, and therefore the work in all must be considered as having been reliable.

In a comparison of the results obtained in the first eighty-five cases, marked disagreement occurred. In thirty-six cases, their results agreed; in sixteen, they differed slightly; in thirty-three there was an absolute contradiction. In the latter thirty-three, a comparison of the results shows the following:

1. Serologist A obtained 24 (73 per cent.) positives and 9 (27 per cent.) negatives. Serologist B obtained 9 (27 per cent.) positives and 24 (73 per cent.) negatives. Serologist C obtained 16 (50 per cent.) positives, 16 (50 per cent.) negatives, and one + minus.

2. Serologist A obtained 9 positives in sera declared negative by Serologists B and C. Serologist B obtained 4 positives in sera declared negative by Serologists A and C. Serologist C obtained 4 positives in sera declared negative by Serologists A and B.

3. Serologist B obtained 12 negatives in sera declared positive by Serologists A and C. Serologist C obtained 4 negatives in sera declared positive by Serologists A and B. Serologist A did not obtain a single negative in sera declared positive by his colleagues.

In the forty-nine cases which were examined by two serologists, agreement occurred in thirty-two (65 per cent.) cases; differences were noted in eleven (23 per

cent.) cases; and contradictions occurred in six (12 per cent.) cases.

A further comparison shows that the three serologists examining the remaining eighty-five cases agreed in 42 per cent. of cases, differed in 19 per cent., and contradicted each other in 39 per cent. The two serologists examining the forty-nine cases agreed in 65 per cent. of cases, differed in 23 per cent., and contradicted each other in 12.

The serologic history of three of the author's patients is given in detail, one of which is as follows: This patient had ten tests made during a period of 16 months, during which time he was under treatment. In seven of these tests three serologists participated, and in but a single instance did all three workers agree (all negative). Serologist A obtained a positive reaction 8 times, a negative one and a + minus one. Serologist B obtained a negative reaction in the seven tests in which he participated; while Serologist C obtained 5 positives, 4 negatives, and one + minus.

The writer quotes a moderate number of similar experiences from the German literature and discusses the various possibilities to account for the discrepancies which occur. In view of the various observations and opinions which Wolbarst reviews, combined with his own experience, he believes that the patient should be informed of the liability of human error and the fallibility of the Wassermann test, and that a single laboratory report should not be considered as final and conclusive; that such a report is, after all, the opinion of the one who made the test, based on the employment of certain reagents chosen and made by himself; that another serologist, using the same or other reagents, might obtain a totally different reaction, and that it is difficult to say which of the two is correct. He believes that a serum should be submitted to at least three serologists simultaneously, and that the latter should be selected with the same care as is a consultant in any other field of medicine; and in view of what he has seen he believes it is reasonable to expect that these independent serologists will differ in their findings in from

20 to 30 per cent. of cases, and the patient should therefore be prepared for this contingency. When disagreement does occur, the physician must necessarily depend on his own judgment as to the best course to pursue.

Among other things, Wolbarst concludes that the Wassermann reaction is dependent for its result on the skill and knowledge of the serologist, and in a great measure also on the perfect standardization of the reagents used. These are subject to variation in the hands of different serologists, which results in a diversity of findings. The work should not be limited to one serologist, but should be checked up by others, and if two or more give the same results the majority opinion may be accepted as fairly conclusive. Frequent examinations are urged.

The writer, in order to overcome these difficulties, suggests that "reagents should be prepared and distributed at a central station (board of health, for example). All workers should adopt a uniform, recognized method which has been found trustworthy and reliable. Meanwhile, Wassermann reports should be accompanied by the name of the individual worker who made the test, together with a brief statement concerning the method, apparatus, and reagent used. In this way only can we determine the degree of confidence to place in the reports handed to us by serologists."

A study similar to the above was undertaken by A. A. Uhle and W. H. Mackinney,⁹ who were stimulated to make the investigation through conflicting reports they had observed in patients whose blood had been examined and reported upon by different serologists. Their study is comprehensive and clarified by tables which should be studied in the original by those interested.

Their report is based on an analysis of 325 specimens of blood, collected from 292 individuals, and submitted to at least four different serologists. In this study of 292 individuals, 25 were normal, 70 suffered from diseases other than syphilis, and 197 were suffering from syphilis in various stages. In order to test varying conditions that might influence the Wassermann, the specimens were taken in both sterile and unsterilized

(9) Jour. Amer. Med. Ass'n., Sept. 4, 1915.

test tubes; also, the specimens were examined at varying periods of time after withdrawal. In order to determine the influence of the digestive process on the reaction, some specimens were taken when the stomach was full, others when empty, and still others after thorough purgation. Other specimens were inoculated with various bacteria. A study of the different tabulated results shows most confusing discrepancies.

In the normal specimens, or, in other words, those from persons in whom syphilis was not present, the reports show positive Wassermanns in from 2.6 to 18.1 per cent. In the table representing findings from cases of active syphilis in the various stages, the positive results varied from 50 to 100 per cent.

In a comparative study of results obtained in a series of 168 tests by five serologists, all the laboratories agreed in their findings in 47 per cent.; they varied in one result in 20 per cent., in two results in 12 per cent., and in more than two results in 21 per cent.; or, as the writers say: "If a specimen of blood from the same individual be submitted to five serologists there is one chance in two that the reports will agree."

In fifty-six cases, ten reports in each case were received from seven serologists, with the following results: They agreed in 21 per cent., disagreed materially in 19 per cent., and varied in from 1 to 4 of the 10 results in 60 per cent. Of the latter, 20 per cent. varied in one test, 20 per cent. in two tests, 12 per cent. in three tests, and 8 per cent. in four tests. In other words, as the writers affirm: "If a specimen of blood from the same individual be submitted to ten tests by different serologists, there is one chance in five that the tests will agree."

The writers conclude as follows:

"Space does not permit of detailing the technique of each serologist; however, four used only specific antigen; one submitted two reports in each case, using two different cholesterinized antigens; another submitted three reports, using two cholesterinized and one specific antigen. Comparing the positive reports submitted by each laboratory with the total positive results in all

cases, they vary from 9.1 per cent. to 58.5 per cent. With two exceptions, the lowest percentages of positive reactions were obtained by the laboratories using specific antigen, and at the same time they agree more consistently with the clinical expectancy.

"After carefully considering the results of the Wassermann test, the clinician can not help but be disappointed in its accuracy. When we consider that various representative serologists report positive findings in from 2 to 18 per cent. of normal individuals, and that in active syphilis, in which the clinical diagnosis is certain, some serologists report only 50 per cent. of positive results, there is every reason to discredit the diagnostic value of the test. In suspected latent syphilis and in syphilis under active treatment, the most extreme variations occur, and in these conditions, in which the clinician needs its help the most, it is the least accurate. Notwithstanding the numerous discrepancies in the Wassermann reports, our experience with this test over a period of several years has convinced us that it is of great value but should be regarded only as a link in the chain of evidence for or against the disease.

"From the experiments undertaken, we have proved to our own satisfaction, and to the satisfaction of the serologists associated in this work, that it makes no difference whether the blood is collected in a sterile or non-sterile test tube; whether infected with the above-mentioned pathogenic organisms or not infected; whether the specimen is one or several days old; or whether the blood is collected when the stomach is full or empty. In a few instances, marked acidosis was present, but it did not influence the test from the standpoint of clinical expectancy. We are firmly convinced that the antigen used by the serologists is not wholly responsible for the discrepancies in the Wassermann report, and there is every reason to believe that a cholesterinized antigen will give a higher percentage of positive reports than a specific antigen. Leaving aside the element of personal equation, serologists cannot obtain uniform results unless a standardized antigen is employed and a uniform technique agreed on."

The Landau Iodine-Serum Test for Syphilis. This test was originated in 1913 by Landau, and as it was supposed to be more sensitive than the Wassermann reaction, and was also much more simple, it became attractive. A large number of workers have recorded their experience with the test.

Landau at first used iodized petrolatum for the test, prepared by mixing 5 drops of tincture of iodine in 10 c.c. of paraffin. To 0.2 c.c. of the serum was added 2.5 c.c. of this reagent and the test tube set aside in a dark place for from five to fifteen hours. It was claimed that syphilitic serum decolorized the mixture, while with normal serum the color persists a reddish yellow. He later modified the technique and used a 1 per cent. solution of iodine in tetrachloride of carbon. To 0.2 c.c. of the fresh serum is added 0.01 c.c. of the iodine reagent. These are well mixed until all color disappears from the reagent and it is set aside in a dark place for 4 hours at room temperature. With the serum of the syphilitic, the fluid is a clear, transparent yellow; with a non-syphilitic serum the fluid becomes a whitish-gray and is opaque.

Kolmer¹ gives his experience with both the reagents above described, having the reaction controlled with the Wassermann reaction. His technique is carefully detailed and the results are summarized as follows:

"1. *Wassermann Positive Serums:* (a) Of seventy-four serums yielding positive Wassermann reactions, fifty-three, or 71.6 per cent., tested in a fresh, active condition, reacted positively in the iodine test as read at the end of four hours; at the end of twenty-four hours, a few serums became cloudy, and thereby reduced the percentage of positive iodine reactions to about 68 per cent.

"(b) The iodine reactions with heated serums and those more than twenty-four hours old yielded results quite similar to those tested in a fresh, active condition, in that 72 per cent. were positive.

"(c) In general, the iodine reaction was negative in

(1) Jour. Amer. Med. Ass'n., May 1, 1915.

about 28 per cent. of serums yielding positive Wassermann reactions and regarded as from luetic persons.

"2. *Wassermann Negative Serums:* The error of the iodine reaction is even greater with serums of normal persons and those suffering with diseases other than syphilis, in that a relatively high proportion, at least 70 per cent., react positively.

"(a) Of sixty-one serums reacting negatively in the Wassermann reaction and tested with the iodine reagent in a fresh, active condition, but eighteen, or 29.5 per cent., reacted negatively as read at the end of four hours.

"(b) Of even greater importance, therefore, is the observation that about 70 per cent. of non-luetic and Wassermann negative serums yield falsely positive iodine reactions.

"(c) With heated or inactivated serums, the iodine reaction at the end of four hours yielded results quite similar to those observed with fresh serum, in that 26 per cent. were negative, and thereby in agreement with the Wassermann reaction.

"With cerebrospinal fluids, the results were entirely unsatisfactory. Practically all fluids reacted alike; that is, the color persisted in the reagent collected in the bottoms of the test tubes and the fluids remained clear, irrespective of whether they were from luetic or non-luetic persons. Of fifteen fluids tested, six gave strongly positive Wassermann reactions and nine reacted negatively, but, as stated, all reacted in a similar manner when tested with iodine in tetrachloride of carbon reagent.

SUMMARY.

"1. Of eleven serums of persons and four of normal rabbits and dogs reacting positively, and of ten reacting negatively in the Wassermann reaction, the tests with Landau's iodized petrolatum were entirely unsatisfactory. Both normal and luetic serums alike were found to produce partial decolorization of the reagent, and complete decolorization was likewise observed with both normal and luetic serums. The results with active and inactivated serum were practically similar.

"2. Cerebrospinal fluids of both syphilitic and non-syphilitic persons tested with iodized petrolatum produced similar results, in that both alike caused little or no change of the reagent.

"3. With the iodine in tetrachloride of carbon reagent, the results with fresh, active serums after standing four hours at room temperature, as directed by Landau, were as follows:

"(a) Of seventy-four serums giving a positive Wassermann reaction, fifty-three, or 71.6 per cent., gave a positive iodine reaction.

"(b) Of sixty-one serums giving a negative Wassermann reaction, eighteen, or 29.5 per cent., gave a negative iodine reaction. As based on the Wassermann reaction, the iodine test yielded about 70 per cent. false positive reactions with Wassermann negative serums.

"4. The error of the iodine test, therefore, is not only in the low percentage of correct positive results, but is especially evident in the high percentage of false positive reactions with non-luetic serums.

"5. With cerebrospinal fluids, the iodine reagent produced no visible changes, irrespective of whether the fluids were from normal or luetic persons."

Stillians² undertook a series of experiments to corroborate the specificity of Landau's iodine serum test for syphilis. He outlines the technique as given by Landau and then gives in detail his own technique. The results of fifty tests in forty-six cases are tabulated. In these cases, 52 per cent. of positive Landau reactions were obtained, whereas the same number gave 84.8 per cent. of positive Wassermans. On the other hand, in a series of non-syphilitics, 27.8 per cent. gave positive reactions with the iodine reagent. After a careful comparison of results, this author says in summary:

1. No reliance can be placed on a positive Landau, because it occurs in a large percentage of non-syphilitic serums.

2. A negative Landau is of no value in proving absence of syphilis, for a large proportion of syphilitics have negative Landaus.

(2) Jour. Amer. Med. Ass'n., June 12, 1915, p. 1964.

3. So far as this series of cases can show, no definite relation exists between syphilis and the Landau serum reaction.

In a later paper, Kolmer³ having discovered that in his original work he had used a smaller amount of reagent than was originally suggested by Landau, repeated his experiment.

In this work, 142 serums and fourteen cerebrospinal fluids were tested. The technique is carefully outlined and the results indicated, and from this new work the author concludes as follows:

"To sum up, the iodine color-test as conducted with the correct technique was found to have no practical value in the serodiagnosis of syphilis, because of its irregular results, as shown by the low percentage of correct positive reactions with Wassermann positive serums, and more especially by reason of the high percentage of false positive reactions with Wassermann negative serums."

The Wassermann Reaction as a Clinical Test, with Special Reference to its Bearing on Matrimony. This article was written by Heimann⁴ in response to this statement: "A positive Wassermann does not prohibit matrimony," made by Keyes in the *Journal of the American Medical Association*, March 6, 1915.

The writer discusses the various disorders, other than syphilis, capable of producing a positive Wassermann. Many experimental cases of syphilis are quoted in which no positive signs of the disorder were present other than a positive Wassermann reaction. These, together with a number of later infections occurring in the absence of symptoms, induces the writer to arrive at the following conclusions:

1. The Wassermann is negative at times in active syphilis, but only under definite and characteristic circumstances; and when this is understood no confusion should arise.

2. The Wassermann test may be positive in the absence of syphilis in certain diseases and under certain

(3) Jour. Amer. Med. Ass'n., June 12, 1915.

(4) Ibid., May 1, 1915.

conditions, which can usually be recognized and excluded.

3. With these exceptions, the positive Wassermann indicates active lues.

4. Clinical and experimental corroboration of this point of view exists, and thus assent to matrimony should be withheld from individuals with a positive Wassermann test.

TREATMENT.

Treatment of Syphilis. As a definite technique has not yet appeared in treatment of syphilis, a review of methods employed by competent observers is always of value.

Strachstein* gives the results of personal observations in European clinics as follows:

Professor Wechselsmann, at the Virchow Krankenhaus, Berlin, is of the opinion that salvarsan and its derivatives can cure syphilis without the aid of mercury. In his division, where probably more than 40,000 salvarsan injections have been administered, mercury is an unknown drug. The patient is given an intravenous injection of salvarsan or subfascial injection of neosalvarsan once in from three to seven days until he receives from five to seven injections. The Wassermann is taken during the period of treatment and again at regular intervals several weeks after the last injection. There are, however, but few authorities in Germany who support Wechselsmann's teachings. As evidence of this, Wechselsmann was severely attacked and criticized by many when he presented his reports and statistics before the *Berliner medizinische Gesellschaft*.

In Professor Lesser's clinic, at the *Charité* in Berlin, under the guidance and supervision of Professor Tomaschewski, Strachstein was able to observe and follow up a series of patients treated by a method which is followed in many other clinics, and which he describes in detail:

Before a given fresh case of lues is undertaken for treatment, it is necessary to have an accurate knowledge,

(5) New York Med. Jour., April 17, 1915.

not only as to the presence of spirochetes in the primary lesion, but also as to the Wassermann reaction, even though spirochetes have been found. This step is important, because in cases in which spirochetes have been found in the primary lesion, and the Wassermann reaction is still negative, it indicates that the infection is still of a local nature, and also that the spirochetes have as yet not been thrown into the general circulation, causing thereby a systemic infection. In such cases, the treatment may be successfully carried out by the abortive method; on the other hand, a positive Wassermann shows an undoubted general systemic infection, which will require a more prolonged and persistent treatment.

Generally, the spirochetes can be demonstrated in the primary lesion in from ten to twelve days after infection. The duration of the primary lesion often depends upon how soon spirochetes are found. When they are numerous and found early, it indicates a short duration. The spirochetes can be best procured from the edge of the chancre and not from the center. The first few drops of secretion are best wiped away until one is able to procure a drop of serum from the deep and infiltrated tissue, since it is here that the spirochetes are lodged. The dark-field illumination method should be the one of choice. Its simplicity, accuracy, and the little time required recommend its use.

Should calomel powder locally have been applied to the primary affection, spirochetes will not be found, and in such instances it is best to apply normal saline solution for twenty-four hours before a search is undertaken. Iodoform powder does not hinder their presence.

Having ascertained the presence of spirochetes and having found the blood to be negative, we can safely proceed with the treatment by the abortive method, *i. e.*, the immediate administration of salvarsan without any preliminary use of mercury, provided, of course, that there exists no contra-indication.

First day: Administer salvarsan 0.1 intravenously and watch for ill effects. Should any arise, it indicates that the patient does not tolerate this drug, and the

treatment should be modified. The case presenting no ill effects, proceed as follows:

Second day: Intramuscular injection of 0.5 c.c. calomel emulsion, consisting of calomel 1.0, olive oil 10. Pause from three to four days, and, if no complications arise, proceed on the

Sixth or eighth day: Calomel emulsion 0.5 c.c.

Tenth or twelfth day: Salvarsan 0.3 c.c.

Fourteenth day: Calomel 0.5 c.c. for five times at corresponding intervals.

Twenty-sixth day: The third salvarsan injection of 0.3 c.c. is administered. At the end of the first month, from five to eight calomel injections are resorted to at the corresponding intervals. This is followed by two more salvarsan injections, making 5 in all, and finally from five to eight calomel injections are given on an average twice a week. The entire course of treatment should last about eight weeks. Before a cure is pronounced, a Wassermann reaction is taken after a lapse of two months, which must be absolutely negative. In cases in which calomel injections are found to be extremely painful, the dose may either be reduced or replaced by the salicylate of mercury. When the glands are found enlarged, while the Wassermann is still negative, the abortive treatment is not to be recommended.

In the second group of cases, in which the Wassermann had already become positive, the treatment differs. It has been observed by many authorities that when salvarsan is administered without a previous brief preliminary mercury treatment, the dead spirochetes are abruptly thrown in large numbers into the system for absorption, thus causing toxic symptoms. Furthermore, the Herxheimer reaction frequently observed in the skin may similarly occur in the central nervous system, meninges, and along the optic nerve, and cause an occasional fatal result. Therefore, it is advisable to reduce gradually the number of spirochetes and cause their absorption slowly. This is best accomplished by administering mercury for one week prior to the administration of the first salvarsan injection.

The inunction method with blue mass is used in cases

in which the patient can be relied upon zealously to devote the proper length of time for rubbing in the drug. The preparation is absorbed slowly and may be gradually increased to point of toleration. This method is best carried out before bedtime and in a small closed room, so that the patient absorbs a certain amount of mercury through the lungs. If the patient performs his inunction in the morning, however, and thereafter does considerable manual labor, the effect of the mercury will be very mild, especially in summer, since it will be rapidly eliminated. Each inunction should last twenty-five minutes and should be made each night on some different part of the body. On the seventh day, a bath is taken for cleansing purposes. A light-weight individual may begin with 3 grams, while a large one gets 5 grams. The treatment may thus be tabulated:

1. Give 6 inunctions, then administer salvarsan 0.2.
2. Give 6 inunctions, followed by salvarsan 0.3.
3. Give 12 inunctions, followed by salvarsan 0.3.
4. Give 12 inunctions, followed by salvarsan 0.3.
5. Give 12 inunctions, followed by salvarsan 0.3.

Besides the foregoing, give an injection of calomel emulsion in 0.5 c.c. of 1 part of calomel to 10 parts of olive oil, once a week. After the administration of three salvarsan injections, twenty-four inunctions, and three calomel injections, a Wassermann reaction is taken, and if this is found to be positive one must resort to a more vigorous treatment. Twelve weeks after the last salvarsan treatment, another Wassermann is taken, making in all three reactions, thus: (1) One at the outset for diagnosis; (2) one after the third salvarsan injection; (3) one three months after the last salvarsan injection.

If, for any reason, the inunction method can not be carried out properly, one must resort to the injection method, using some insoluble salt of mercury like calomel or the salicylate of mercury or gray oil. The injections are carried out as follows:

1. First day, 0.5 c.c. of the emulsion (1 to 10 of calomel or salicylate of mercury in olive oil).

2. Three days later, 1 c.c. of the emulsion is given.

3. Three days after the second mercurial injection, the first salvarsan, 0.2 c.c., injection is given. Then continue to give three mercurial injections after each salvarsan injection, so that in all five salvarsan injections are given, and the last one is followed by five mercurial injections.

Tomaschewski recommends that after a patient has gone through such a cure he should undergo a physical examination three months later, to ascertain the condition of his skin, mucous membranes, tongue, throat, genitals, anus, palms of hands, and the hair, and also that a Wassermann should be performed. If the Wassermann is negative, wait another three months. Six months after the completion of the first treatment, the patient is put through a second. The Wassermann reaction is then tried every six months for three years, and if it remains negative then the patient may be considered cured.

Patients with latent syphilis in whom a positive Wassermann is present, should undergo a long series of injections, combined with salvarsan or gray oil injections, or both.

When a patient has gone through an abortive treatment and the Wassermann reaction remains negative one and a half years after the completion of the cure, then consent may be given to marriage. The other group of patients should not marry until two years after a successful completion of the last treatment. It is advisable, however, to put a patient through a third course prior to marriage.

To those who have had tertiary manifestations, marriage should not be permitted until five years after the completion of the last treatment. But those belonging to this group should have a lumbar puncture performed and the fluid examined, to ascertain whether there are inflammatory changes in the central nervous system. The fluid when tested by the Nonne-Appeld test should remain perfectly clear, contain no albumin, and be microscopically free from cellular elements; the Wassermann should be negative. Should, however, any of these ele-

ments be present, it would indicate that the patient is threatened either with tabes dorsalis or general paresis.

Disappearance of Salvarsan from the Blood After Intravenous Injection of Aqueous and Serum Solutions. In 1914, Kotter⁶ determined the number of hours necessary for the disappearance of salvarsan from the urine after intravenous injections of concentrated solutions in water and in autogenous serum. For 0.3 salvarsan, the average was 16 hours for the aqueous, and 27 hours for the serum solution. For 0.4 salvarsan, the numbers were 19 hours and 42 hours, respectively, thus showing that the larger dose required more time for elimination.

Treupel⁷ determined the length of time required for the disappearance of the drug from the blood-stream, using as an indication the *Abelin*⁸ method. This consists in the addition of 2 drops dilute hydrochloric acid and 3 drops 0.5 per cent. sodium-nitrate solution to 1 to 2 c.c. of the serum. The serum is then carefully run into a tube containing 0.3 gm. of resorcin in 4 to 5 c.c. of 30 per cent. sodium hydrate solution. A bright-red ring indicates the presence of the amido group, representing the splitting products of the salvarsan.

The results showed that for 0.1 gm. of salvarsan the average time of disappearance of the aqueous solution was nine and one-half hours, whereas that for the serum was only eight hours. For 0.4 gm. the average was thirteen and one-half and twelve hours, respectively.

The interpretation of these results is, that the serum solution is much less toxic (an approximate ratio of 1 to 3), as was shown by Spiethoff,⁹ and therefore the drug is promptly taken up and stored by the organs, and hence more time is required for elimination.

Salvarsannatrium (Sodium Salvarsan). Loeb¹ treated ninety-four cases with the new preparation, numbered 1206 A, supplied him by Ehrlich's laboratory. The drug contains about 20 per cent. arsenic, and is

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- (6) Med. Klin., No. 19.
 - (7) Derm. Zeitschr., February, 1915.
 - (8) Münch. med. Wochenschr., 1913, No. 2.
 - (9) Med. Klin., 1914, No. 14.
 - (1) Deutsche med. Wochenschr., March, 1915.

given in the same dosage and in the same concentration as neosalvarsan. The preparation is a golden-yellow powder, readily soluble in water, producing a yellow alkaline solution with a peculiar aromatic odor. Exposed to the air, the solution rapidly oxidizes and becomes dark colored and highly toxic. From 7 to 10 c.c. of freshly distilled, boiled and cooled water per each 0.1 gram is used for the intravenous injection. One intramuscular injection of 0.2 grams in 4 c.c. of water was given. The pain was marked, but ceased after three hours. There was no induration.

The drug was found to be as readily tolerated and fully as efficient as neosalvarsan. The author thinks it highly important to have still a third preparation of salvarsan, for the reason that a given strain of spirochetes might become immune to one or the other.

Galyl in Syphilis. A new arsenical compound claiming attention in the treatment of syphilis is further reported upon by Foerster.¹ The drug galyl was produced by Mouneyrat, the discoverer of hectine. It contains 35.3 per cent. of arsenic and 7.2 per cent. of phosphorus. It is a yellow powder, insoluble in distilled water, but is readily soluble in weak solutions of sodium carbonate. The technique of its administration is the same as for salvarsan. Nine case reports are given. The immediate clinical results are said by Foerster to be equal or superior to those of salvarsan. Some temporary ill effects occurred with large dosage (0.5 grams of the drug); using 0.3 or 0.4 grams, no such symptoms occurred. The untoward symptoms which occurred in three cases were as follows: Immediately after the injection, flushing and dyspnea occurred, quickly followed by pallor. The pulse became rapid (100 to 120) and weak. These phenomena soon passed off and gave no alarm. With small dosage this was avoided. The reporter suggests beginning with 0.3 grams for males and 0.2 for females. The effect of the drug on the complement-fixation test and on late lesions is yet to be studied.

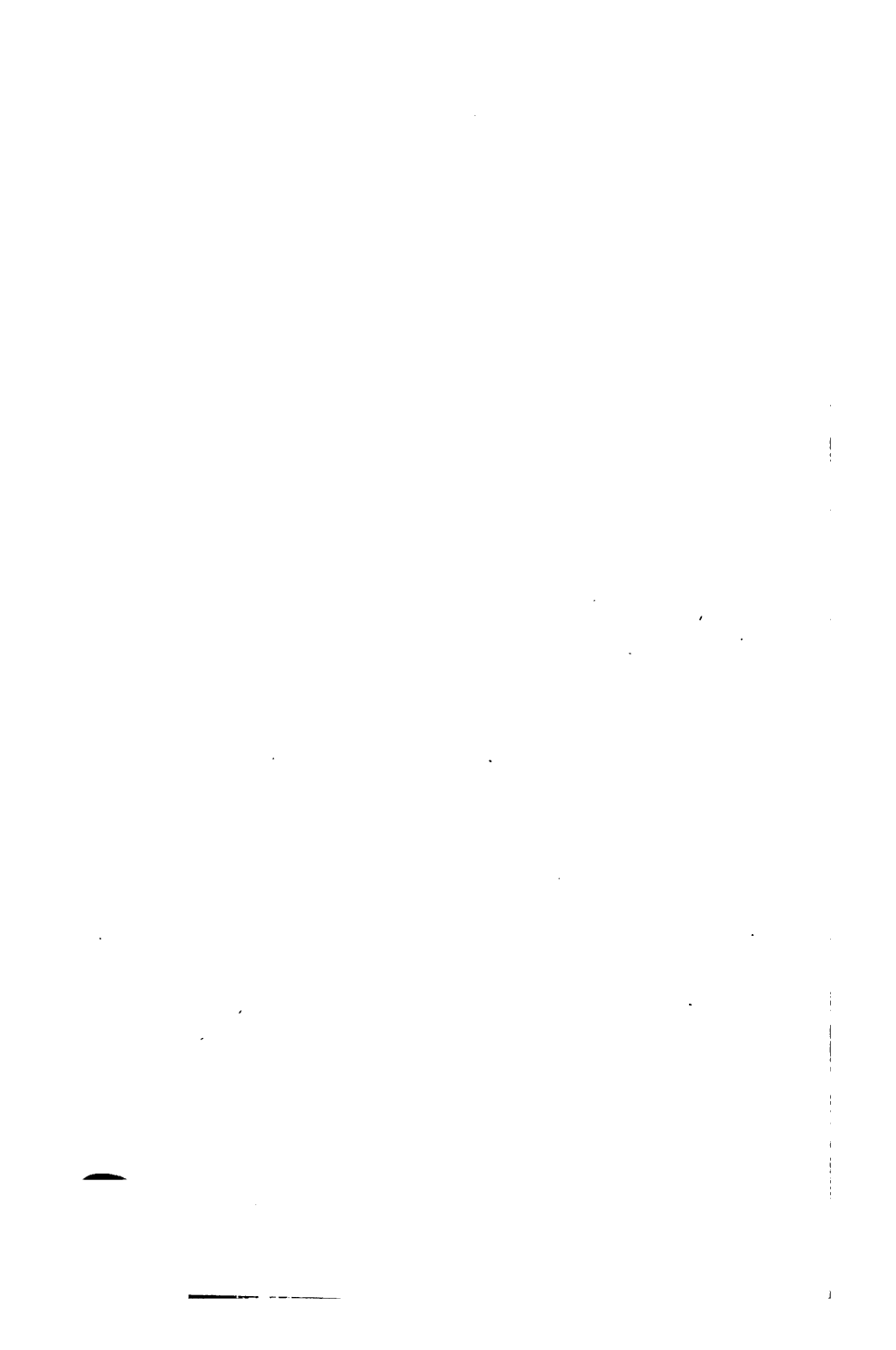
Pulvis Fluens Hydrargyri (Quecksilbergleitpuder). There have been three chief objections to the use of

(1) Lancet, Sept. 18, 1915.

Unguentum hydrargyri: (1) the difficulty in preparation, involving the extinction or "killing" of the globules of mercury in the ointment base; (2) the color of the preparation and the consequent soiling of the skin and clothing; and (3) the irritation produced by its application.

Unna³ has overcome these objections by rubbing up the mercury in lycopodium, using enough turpentine oil to facilitate the process. The resulting powder is very smooth—*Gleitpuder*—and almost the color of the skin. It can be used for direct application to primary lesions, as a dusting powder for luetic ulcers, and in the ordinary course of treatment as a substitute for the ointment. It is of especial value, he asserts, as a dusting powder in pediculosis.

(3) Derm. Wochenschr., April, 1915.



MISCELLANEOUS.

BY

HAROLD N. MOYER, M. D.

MISCELLANEOUS.

Feminism. Dr. Lee Alexander Stone,¹ of Memphis, contributes an interesting article on feminism, in which he states that the history of civilization could never have been written on pages marked by years of time if woman had not taken an active part in its development and if she had not always been present to give sound advice and be ever ready to stand up for principles she thought right.

He argues that woman's position is preëminently higher than that occupied by man but that she should remember that man is still and always will be an appendage and that she, herself, is absolutely necessary to his existence. Instead of arguing from the point of motherhood, women at present attempt to establish a new order of things and force themselves into a position which is entirely undesirable, that of trying to overcome in a moment the traditions and environments in which they were brought up. Dr. Stone believes that it is within the power of woman to revolutionize the ethics of man but she must first of all learn how to revolutionize the conditions surrounding her, and that are of her own making.

He does not believe that women will ever possess the true spirit of democracy, that she is too fond of pomp and show, that during her whole existence she has fought for autocracy and what autocracy will bring, that while she has the faculty of being able to adapt herself to her surroundings, she becomes filled with the autocratic spirit sooner or later because of the influence and money showered on her.

A woman who has been brought up in direct poverty will make the best of conditions surrounding her, but change the conditions of that woman by giving her

(1) Memphis Med. Monthly, June, 1915.

money and position and, unquestionably, you will notice a change. She forgets all of the past and lives only in the now, she becomes proud and arrogant with those she thinks beneath her, and starts a bitter fight for social superiority. Women whose husbands are self-made and who have come up from the rabble, are the ones making the bitterest fight for a place among the "four hundred" of their community.

Another thing he argues, which shows on the face of it that woman is not at heart a democrat, is the way she bedecks herself with baubles of one kind or another and goes to extremes in fashion in order to make a great display and create envy in the hearts of those among her acquaintances who can not afford to make the same display. He argues that if any good is to come from the women's suffrage movement it will be necessary to lay aside maudlin sentiments and deal with facts as they may present themselves and it already appears that there is a broader and brighter intellectuality being developed and less superstition and narrowness, which speaks well for the future. When women have done away with sentimentality, so far as business is concerned, they will perhaps make better municipal officers and will be able to handle great questions, especially those that may pertain to their own sex, as for example increase in wages for working women, the abolition of child labor, and the regulation of the liquor traffic. They will also be better able to handle the question of prostitution and do a great deal toward improving the standard of morals, teaching children just what life means and that false standards of prudery and modesty should be torn down and new ones raised that will be emblematic of truth and purity.

He believes that in the future women will be looked to to establish a new order of things and if they could but realize their strength, how easy it would be for them to attain their goal.

Medical Education. The Council on Medical Education of the American Medical Association in its annual report,² gives some interesting statistics.

The total number of medical students in the United

(2) Jour. Amer. Med. Ass'n., Aug. 21, 1915.

States for the year ending June 30, 1915, excluding pre-medical, special and post-graduate students, was 14,891, a decrease of 1611 below last year, a decrease of 2124 below 1913, and a decrease of 3521 below 1912. There has been a decrease not only in the regular colleges, but in the homeopathic and eclectic colleges.

It is claimed that the unusual decrease in the number of students this year, particularly in the non-sectarian colleges, has been due to the enforcement for the first time by thirty-nine medical colleges of higher entrance standing—one or two years of preliminary collegiate work.

The total number of graduates for the year ending June 30, 1915, was 3536, a decrease of only 58 below 1914, and a decrease of 445 below 1913. There has been a decrease of 53.6 per cent. in the number of graduates from the homeopathic colleges and a decrease of 75.1 per cent. from the eclectic colleges and of the 3536 medical graduates 24.3 were reported to hold also degrees in arts or sciences, a larger percentage than the past three years. Of the graduates from the non-sectarian schools 22.5 per cent. were reported to have baccalaureate degrees. Of the homeopathic graduates 8.2, and of the eclectic graduates 5.5 per cent. were reported as holding degrees from colleges of liberal arts.

There were fewer women studying medicine last year than heretofore. There has been a gradual decrease since 1904 (47.6 per cent.). Of all the women matriculants 19.6 were in attendance at the two medical colleges for women, while the remaining 462 or 80.4 were matriculated in the fifty-three co-educational colleges.

The number of medical colleges also is less than at any time since 1880. There has been a rapid decrease in the number since 1904, there being a net decrease of sixty-six colleges since 1906. The net reduction has been 41.4, leaving but ninety-five medical colleges in existence at the present time. The non-sectarian colleges show a net reduction of forty-seven or 36.1 per cent. since 1906, when there were 130, the largest number of non-sectarian medical colleges. The homeopathic show a net decrease of fourteen or 63.7 per cent. since 1901, when twenty-

two, the largest number of homeopathic colleges, were in existence. The eclectic colleges show a net reduction of six or 60 per cent. since 1901, when there existed ten, the largest number of eclectic colleges.

The report shows that, while the total number of colleges is growing smaller and approaching more nearly the normal supply for this country, the high grade, stronger medical colleges are constantly increasing. The length of terms of each college fluctuates somewhat from year to year, but on the whole, during the last twelve years there has been a decided lengthening of college terms. Of the ninety-five colleges now existing eighty-nine or 92.7 per cent. now claim to require from thirty-one to thirty-eight weeks of actual work, exclusive of holidays, as compared with 30 per cent. in 1901.

Illinois has the largest number of students enrolled, followed by New York and Pennsylvania. New York has the largest number of medical colleges (ten), while Illinois has eight, Pennsylvania has seven and California has six colleges.

The Value of Preliminary Education. It is often of interest to note how simple truths of great importance today were recognized generations ago. In a personal letter, Oliver Goldsmith, distinguished English author, humorist, poet, and in his youth, physician, wrote the following comment on the value of preliminary education for the study of medicine:

"Give me leave to say that the circle of science which I have run through, before I undertook the study of physic, is not only useful, but absolutely necessary to making a skilful physician. Such sciences enlarge our understanding, and sharpen our sagacity; and what is a practitioner without both but an empiric, for never yet was a disorder found entirely the same in two patients. A quack, unable to distinguish the particularities in each disease, prescribes at a venture; if he finds such a disorder may be called by the general name of fever, for instance, he has a set of remedies which he applies to cure it, nor does he desist till his medicines are run out, or his patient has lost his life. But the skilful physician distinguishes the symptoms, manures the ster-

ility of Nature, or prunes her luxuriance; nor does he depend so much on the efficacy of medicines as on their proper application."

Primitive Medicine. Dr. George Dock,³ of St. Louis, gives a vivid picture of eighteenth century medicine. In an article on "Primitive Physic" by the Rev. John Wesley, it seems that the Reverend John while an undergraduate at Oxford, became interested in medicine and was largely influenced by reading "Health and Long Life" by the celebrated Dr. George Cheyne. He also collected many old women's nostrums. Sometime later he opened a dispensary in Bristol, which was so successful that he followed it with others in Newcastle and in London, combined with arrangements for the free treatment of the sick in their homes.

He became interested in electrotherapy and treated thousands of people with his electric machine. Later he published a medical work entitled "Primitive Physic or an easy and natural method of curing most diseases." He gives some excellent advice in this work, such as, to prevent pain and sickness we must follow the command: "In the sweat of thy face shalt thou eat bread." Exercise and temperance are dwelt upon. He believed in the efficacy of empirical medicine and the herbs used by the American Indians. He advised exactness in manner of living, warned against mixed and highly seasoned foods and recommended a sparing diet and only water as a drink: "as much exercise in the open air as possible without weariness, light supper, early to bed and rising betimes." He believed in prayer and faith in God, urged the advantages of a calm and tranquil mind, with the passions kept within balance—principles that he, himself, exemplified to a singular degree.

While many of the drugs and remedies recommended seem absurd to us today, the principles of hygiene and right living recommended by Wesley can not be improved upon by any of our authorities on personal hygiene.

As regards dietetics, he was pretty sane, advising prunes for constipation, whole wheat bread, bread crust

(3) Jour. Amer. Med. Ass'n., Feb. 20, 1915.

for dropsy, withholding meat from children under two years and tea before twelve, etc.

While we look upon his remedies and on medical practice in Wesley's day as absurd, the fact remains, nevertheless, that out of 160 drugs that he recommended all were used by Sydenham, and seventy-eight, or nearly one-half of the drugs are now official in the U. S. Pharmacopia.

Dock wonders whether the physician a hundred years from now will look upon the practice of today as we look upon the practice of one hundred years back. Will much of the theories regarding germs, toxins, vaccines and serums, the removal of tonsils, teeth and ovaries be considered as foolish as some of the methods in vogue in Wesley's time.

Like many another able man of his time, Wesley believed in some mystic forms of treatment, yet firmly as he believed in the supernatural, as he viewed it, he did not mix his medicine with religion, for his recommendation of prayer in treatment is very mild. "It remained," as Dr. Dock says in closing his article, "for the age of the greatest discoveries in natural science and the period of the most rampant materialism and so-called rationalism to develop the most varied and extreme methods of superstitious therapeutics, and to revive, without improvement, under the name of 'New Thought,' methods familiar thousands of years ago."

The Dublin Medical and Physical Essays. The number of medical periodicals published in England and Scotland during the eighteenth century was considerable, but it was not till the nineteenth century had well started that the example thus set was followed in Ireland. Some few medical papers from time to time appeared in the Transactions of the Royal Irish Academy, contributed by medical men who were members of that corporation, but such papers were few in number, and the transactions can not be looked upon as in any sense a medical publication.

With the advent of the nineteenth century, however, though many things in Ireland entered on a distinctly retrograde movement, the study of medicine appears to

have entered on a new life with renewed activity. It would almost seem as if those energies, deprived of that outlet in politics which had been so free in the previous century, found a more useful, if less exciting, vent in the study of science. The reconstitution of the School of Physic, consequent on the passing of the School of Physic Act (1800), and the newly-founded School of the College of Surgeons had considerable influence in attracting medical students to Dublin. Medical teaching became a profitable occupation, and the competition among the teachers quickly led to an increased activity in the study of medicine in the Irish capital.

The example of both England and Scotland had shown that a much greater publicity was obtained by means of periodical publications than by pamphlets, and publicity was essential for the attraction of pupils. Furthermore, short papers and notes of cases could be much more readily issued in a medical periodical and at a much smaller cost than separate papers.

Accordingly, we find that in 1807 four Dublin practitioners joined together to issue a quarterly journal devoted to medicine. These four—Hugh Ferguson, Francis Barker, Samuel Bell Labatt, and Charles Hawkes Todd—were all comparatively young men starting in practice, and all but one of them had studied medicine in Edinburgh.

Hugh Ferguson, a Scotchman by birth, had entered Trinity College on October 6, 1783, at the age of fifteen years. In 1791 he graduated B. A., and then went to study medicine in Edinburgh. He graduated M. D. there in 1794, reading a thesis: "*De Phthisi Pulmonali.*" Subsequently he returned to Dublin, and in 1802 was admitted to Licentiate of the King and Queen's College of Physicians; in 1804 he was elected a Fellow; and in 1819, 1827, 1831, and 1833 was President of the College. For some time he held the post of clinical lecturer at the School of Medicine in Hardwicke Street. He died in his house in Sackville Street on August 14, 1844.

Francis Barker, also a student in the Dublin University, graduated in Arts there in 1793. Two years later he took his M. D. degree in Edinburgh, reading a thesis:

"De Animalium Electricitate." Shortly after his return to Dublin he was appointed by the Board of Trinity College as assistant to Dr. Perceval, the Professor of Chemistry. In July, 1803, he was commissioned by the board to go to Paris "for the purpose of purchasing fossils" for the college, and again two years later the board granted him a special honorarium of fifty pounds for his "extraordinary exertions in the different courses of chemistry that he has given." On the resignation of Dr. Perceval of the professorship of Chemistry, Barker was, on May 16, 1808, elected his successor, and he continued in office until he was superannuated on February 4, 1850. In 1805, Barker was admitted a Licentiate of the King and Queen's College of Physicians; in 1807 elected a Fellow; and in 1810 Trinity College granted him (Stip. Con.) the degrees of M. B. and M. D. For many years Barker was secretary to the board of health and one of the Physicians to Cork Street Fever Hospital. He died on October 8, 1859, at Wellington Road, Dublin, aged eighty-six years.

Samuel Bell Labatt was also a graduate of Edinburgh, where he had taken the degree of M. D. in 1797, reading a thesis: *"De Podagra."* From 1800 to 1803 he was assistant master at the Dublin Lying-in Hospital, and while there, in 1802, was admitted a Licentiate of the King and Queen's College of Physicians. On May 1, 1807, the Governors appointed Labatt to the charge of the Lying-in Hospital on the resignation of the Master, Thomas Kelly, till a new Master could be appointed at the Charter Meeting in November. Subsequently, in 1814, he was elected Master for seven years. In 1829 Labatt was elected an Honorary Fellow of the King and Queen's College of Physicians. He died in September, 1849.

Charles Hawkes Todd, the son of a surgeon apothecary of Sligo, was born in 1782. At the age of twenty-one he passed the College of Surgeons in Ireland, and in 1805 was elected a member. For several years he was surgeon to the House of Industry Hospitals, and in 1819 was appointed Professor of Anatomy and Surgery in the School of the Royal College of Surgeons. Todd died

at his house in Kildare Street on March 19, 1826. Two of his sons afterward became well-known men. James Henthorn Todd was a Fellow of Trinity College and noted for his antiquarian researches. Robert Bentley Todd was the distinguished anatomist and physiologist of King's College Hospital, London.

Such then were the editors of the new quarterly paper issued under the title of "The Dublin Medical and Physical Essays." The editors wisely decided to admit only such contributions as were authenticated by the name of the author, and also to exclude all papers dealing with that thorny question, then coming into prominence, "medical reform." As they said: "It is the object of this present undertaking to advance medical knowledge, by promoting a spirit of inquiry and interchange of opinion among scientific men, and the editors apprehend, it would be inconsistent with this plan to introduce the discussion of a subject, which is not immediately subservient to the attainment of these ends."

The paper was divided into three departments—original communications, critical analysis of recent publications, and medical and physical intelligence. Under the last heading were included extracts from various British and foreign medical journals. At the present time the original contributions are the most interesting, and we find among their authors many of the most prominent medical men of the country. Some of these papers are of great interest, such as that on "Lithotomy" by Peile, on "Dermatitis Gangrenosa" by Whitley Stokes, and on "Medical Jurisprudence" by William Dease.

In spite of the high standard of the paper it ceased to exist after the issue of the sixth number in June, 1808. No cause is given for its death, and there is nothing in the last number to suggest that a future number would not appear. Wilde tells us that it died from want of support, but that seems hardly likely. Possibly the appointment of Barker to the chair of Chemistry in Trinity College may have had something to do with it. The cause of its death must, we fear, remain conjectural, for we have not been able to obtain any information as to the extent of its circulation. The circulation was

probably not large, for it is now one of the scarcest of the Irish medical journals.

The Doctor's Bag.⁵ Perhaps nothing will better illustrate the change that has occurred in the practice of medicine during the past twenty-five or thirty years than to note the sort of appliances carried by the country doctor now as compared with former times. During the eighties, the manufacturing pharmacists began the plan of supplying doctors, whether practicing in the city or country, with all their drugs in tablet form. When active drugs are used and the tablet contains but a single ingredient, or at most two or three, whose combination has a recognized value, there can be very little objection to this method of dispensing, and indeed much may be said in its favor. But soon all sorts of combinations of drugs appeared. Most of these are thoroughly unscientific or inert, or contain ingredients whose action is antagonistic to each other, and in most of them no one could anticipate what their action would be. This led to exceedingly loose prescribing and caused a habit in doctors inclined to be careless or hasty of giving the patient what the doctor had with him rather than what the patient's condition required.

Most country doctors filled their emergency bags with these tablets and carried little else. Indeed, the refinements in diagnosis which we now have did not exist, and prescribing was necessarily less accurate.

Lately we looked through the bag of a country doctor who tries to practice according to modern standards, and this is what we found: two soft catheters; a pocket-case containing scissors, scalpels, lances and forceps; another small case containing an electric lamp and specula for examining the ear, nose and throat, and a magnifying glass; a Tycos sphygmomanometer; a Tallqvist hemoglobin scale; a pipet for counting the white corpuscles, and another for red corpuscles, with appropriate diluting fluids for each; a number of slides for making blood smears; two blood serum tubes and two agar slants;

(5) The Medical Reporter, of the Chester County (Pa.) Medical Society.

three tubes of old tuberculin for making the von Pirquet test; a hand-ball syringe; sterile gauze; cotton and bandages; a roll of adhesive plaster; a rectal tube; needle for hypodermoclysis and for intravenous injection of fluids or for spinal puncture; an aseptic glass syringe; a syringe for exploring purposes; a tube of smallpox vaccine; needles threaded with silkworm-gut and cat-gut in sealed glass tubes; a pair of rubber gloves and the following drugs: a bottle of bichloride tablets, calomel and soda tablets, headache tablets, A. S. & B. pills, assayed tr. digitalis, tr. iodine, a tube of sterile petrolatum, 3 ounces of alcohol and two half-pound cans of ether. This physician also carried a hypodermic syringe and a case of tablets for hypodermic use, a clinical thermometer and a Bowles stethoscope.

It will be seen from the above equipment that about all that this doctor tried to do was to make a scientific diagnosis, and then he ordered from the local drug store the medicine he thought his patient required. He does not claim that it is an ideal equipment, but it was evolved by twenty-five years of practice as that which best suited his particular needs. It is subject to change as need requires, and it suits him better than a bag full of tablets that he, at least, can not use intelligently.

Work for the Sake of Health.⁶ "There are, strange as it may seem at first thought," says the *Journal of the American Medical Association*, "certain modern industrial changes which carry with them detrimental features that are not apparent on the surface. A growing group among whom the amount of muscular work done is small in comparison with the daily activities of their ancestors is coming into existence." The *Journal* does not refer to the fact that shorter hours of work have everywhere become the custom—that the blacksmith who formerly toiled twelve hours now completes his working day in eight hours. The changes which it considers are a consequence of altered methods of conducting business with modern extension of commerce. Machinery has replaced muscle. The development of the industries by machinery has called for a different type of human working-power

in which skill rather than strength is required. As a modern writer has expressed it, the bodily qualities of the worker have been forced by the employer more and more into the background of valuation. Industrial factory work requires not so much strong men as persons who can perform with skill the many small tasks which the machines have so far not been able to perform. Hence the tendency to employ children, half-grown persons and women.

More significant than this is the fact that the number of those who do little manual labor has increased greatly. This is an era of office workers, of business and governmental officials whose implements are the desk, chair, pen and pencil, rather than the hammer and the hoe. Even in agriculture machinery has eliminated some of the hardest types of manual labor. Muscular exercise, however, is a benefit rather than a detriment to the human economy. It improves the function of the essential organs of the body, hence there has arisen an unexpected consequence, namely, the habit of trying to avert the possible harmfulness of some of these changed conditions by "balancing the lack of paid muscle work by work for hygienic reasons, by play and sport." The creation of work for the sake of health sounds almost paradoxical.

An Anatomic and Mechanistic Conception of Disease. J. E. Goldthwait⁷ distinguishes the two well-marked variations from the normal type of body structure as follows: In the splanchnoptotic or carnivorous type the figure is slender, the skin soft and delicate, the hair is abundant, the head is proportionately large, and the face and jaw are narrow. The palatal arch is high. The adenoid and tonsillar tissues are apt to be excessive. The torso is longer than the so-called normal and is also narrower. The increased length is chiefly in the lumbar region. The ribs are usually longer than is normal. The downward inclination of the lower ribs is very marked. The spine is smaller than normal and the lumbar vertebrae are more like the so-called normal dorsal vertebrae in shape. The stomach is long and tubular; its attach-

(7) Boston Med. and Surg. Jour., June 17, 1915.

ments are less firm. The small intestine as a whole is much shorter than normal. In marked contrast to this type is the herbivorous type represented by the heavily built, broad-backed individual. From the purely medical point of view the recognition of these different types is important since the types apparently carry their own potential of disease. The tuberculous infection and the infections in general, the nervous diseases and acute mental disorders, etc., naturally are associated with the slender type. The arteriosclerosis, hypertrophic arthritis, gout, diabetes (not the insipidus), chronic disease of the kidney, gall-stones, the prostatic hypertrophy, the degenerative mental disorders, etc., are common to the heavy type. The suggestiveness of this in treatment must be obvious.

The author presents a series of deductions of which the following are some of the more important: Symptoms should be interpreted in relation to that which is normal for the special type of anatomy of the patient. Abdominal conditions should be given proper anatomic and mechanistic consideration. With the presence of sugar in the urine it is not impossible that as well as improper food the pressure of the mobile, heavy organs on the pancreas, or its blood-vessels, may be distinctly causative of the symptom. In considering the blood diseases, especially the profound anemias, which can not be explained in other ways, the position of the spleen or the effect which other organs may have on its function should be considered. Many individuals belonging to the slender type which because of its low resistance has added so much to the mortality of infancy and childhood are now being saved. With this type growth without proper guidance inevitably produces a still weaker physique, with drooped figure, narrow chest, etc. These acquired characteristics added to the congenital form accentuate the congenital elements to such an extent that they are much more sure of being present in the following generation.

Care of Wounded in Germany. The surgeon-general of the German Army, von Schjerning,⁸ published re-

(8) Norddeusch. Allg. Zeitung.

cently in a German lay paper the following report on the care of wounded and the health of the troops in the western seat of war. He commented on the difficulties inseparable from the rapid advance of the troops and the fact that at times the violence and long continuance of the artillery fire often rendered it impossible to seek the wounded on the battle-field, because "for days at a time certain points were shelled furiously. Every day many were wounded. The large battles and skirmishes over such a long extent of firing line has made the care of the wounded extremely difficult. Surgeons and bearers had to submit to the military exigencies of the campaign, and there were many hours when it would have been madness to attempt to bring in the wounded. On the whole, however, the arrangements proved satisfactory in every way. All the wounded had their wounds bandaged on the battle-field, and this done so well that often, in fact, nearly always, the first dressing could be left unmolested until they reached the home zone. The severely wounded were brought at once to the field hospital and then to the base hospitals. As the troops were constantly pushing forward, the field hospitals had to be constantly changed and prompt transference to the base hospitals was necessary. But all was done with as little discomfort as possible. The slightly wounded were taken to the base hospitals in carts, autos or on foot; in one week there were from 40,000 to 50,000 of these, and they were all sent back to the home zone. Every train and vehicle bringing ammunition or other supplies to the front was emptied at once and sent back filled with the wounded. Only very rarely any actual hospital trains came through to the front. We had to use freight trains as we could not let the wounded accumulate for fear of bringing on epidemics. We have succeeded in avoiding this. The health of the troops is good. Catarrhal enteritis—isolated mild dysentery cases—is growing less frequent, and there are only scattered cases of typhoid.

"Of course the journey in the freight cars was not always comfortable for the wounded but it was better to send the lightly wounded back home where they could get good shelter and care than to let them lie around

in more or less demolished houses and often without adequate care. I reiterate: The transportation was satisfactory and the wounded were well taken care of at practically every station. I inspected personally 30,000 wounded at Coblenz, Liege, Namur, Sedan, Montmedy and elsewhere along the front and I did not find one who was not properly bandaged. The work on the battle-field and in the base hospitals was the hardest. Physicians and nurses worked day and night with the utmost devotion of all their energies, and I am glad to say that this was fully appreciated by the Kaiser and the military officers. The large number of iron crosses which have been bestowed on the physicians with the army testified to the appreciation of their devoted labors. Of course some wounded man here or there did not have everything to suit him and especially the family complained at times. War nowadays takes no regard for anyone. But it would be too bad to generalize from a few scattered cases, as sometimes happens.

"There are 9,000 physicians in the field. How many are left at home, and who is adapted for service in the field and willing? Surgeons are needed in the home zone too, and as we have sent the wounded back home to be taken care of, the main task is thus placed in the hands of medical men in the home zone, so that we hope there are plenty of physicians and nurses for this task. Many nurses here at the front can find no work to do. It is utterly impossible to use them on the battle-field under present conditions of warfare and the frightful artillery fire. In one of the base hospitals I met Kraus and Pfeiffer and both confirmed my impression that the organization, the personnel and the supplies in the medical department answered all requirements, and they volunteered in addition that the work of the medical men on the firing-line was beyond all praise. As further testimony to this I mention the words of admiration for the work of the medical department spoken by the chaplain in chief for the army who has been at the front. Everywhere under the sign of the Red Cross kindly hands are ready to help and care for the wounded. We can be quite serene. The only thing that has given us trouble

at times hitherto has been the transferring of the wounded from the field to the base hospital. But for this service further means of transportation have already been provided. Our Berlin auto-bus has proved the most useful: I took seventy-five of these along with me at the opening of the campaign. Several other cities have now sent us their park auto-buses. And as now the supply of dressing materials and drugs is regularly replenished, we can be content."

The Teeth of an Army.² In discussing the teeth of an army, we are not indulging in any martial figure of speech; we are simply recalling the very literal sufferings of the English soldiers in the South African campaign from lack of attention to their teeth, as noted in the *British Medical Journal* for Aug. 22, 1914. That journal observes editorially that, complying with a suggestion of the British Dental Association, the director general of the army medical service has gratefully accepted the services of many volunteer dentists to put the dentures of recruits in order; this action will restore to the list of acceptable recruits many who would otherwise have been rejected. It is hoped now to arrange for dentists to be attached to base hospitals and hospital ships, both in England and abroad. Men in uniform, reservists, and would-be recruits are admitted for free treatment, either by extraction or filling, to the National Dental Hospital in London, where a volunteer corps of dental surgeons and students is at work. It has been considered advisable not to worry the war office for help just yet, as a public spirited benefactor has supplied funds for fillings, and the dental volunteers supply their own hand instruments and engines. As our contemporary remarks, since an army travels on its stomach, it seems well that this organ should be protected by good teeth.

Dentistry in War.¹ M. Kraus considers every wound in the region of the face an infected one. Infection of face wounds is of three kinds: (1) spreading subacute phlegmons of the face; (2) emphysema of the upper jaw;

(9) New York Medical Journal.

(1) Wiener klin. Wochenschr., Oct. 23, 1914.

(3) osteomyelitis of the lower jaw. In treatment the following must be striven for: (1) arrest of hemorrhage; (2) fixation of fragments; (3) correction of large wounds of the soft parts; (4) prevention of infection.

Hemorrhage may be controlled by tamponing, pressure bandage, compression of carotid, and, if necessary, by ligation. Lacerated wounds of the soft parts may be corrected by approximation of the wound edges; infection may be combated by application of antiseptic solutions, of which colloidal silver solutions have given the best results. Luxations of the lower jaw are usually unilateral, but occasionally bilateral. The luxation is forward for the most part and the reduction is carried out by putting both thumbs, covered with gauze to prevent the patient's biting, over the lower molars and pressing downward, and backward, until the bone slides over the articular process into position. Fracture of the lower jaw is the most common of the injuries to the bones of the face. The most important symptom is displacement of the fragments. Treatment consists in keeping the mouth clean with gargles of hydrogen peroxide or collargol, and in applying splints. These are either of rubber or of metal and the different models of Schroeder for fractures in different parts of the lower jaw are most serviceable. The prognosis in these cases in the absence of complication is good. At times tracheotomy has to be performed because of the danger of suffocation; ligature of the carotid or lingual artery for hemorrhage, and incision and drainage of an abscess. The treatment with splints lasts for from four to eight weeks. Roentgen-ray pictures should be taken both before and after fixation. Prompt and scientific treatment is of great importance in the treatment of fractures of the lower jaw. If hard or soft callus is allowed to form between the fractured ends of the bone, deformities and loss of function will take place, difficult or impossible to correct subsequently.

Medical Study of the Consequences of the Present War, by A. Espina y Capo.² Apart from the actual physical injuries inflicted by projectiles, asphyxiating

(2) *Rev. de med. y cir. prac.*, Sept. 14, 1915.

gases, etc., there must be studied the illnesses peculiar to armies on active service, and still further the effect of the war on such individuals as escape both medical and surgical mishaps while in the field. Youths are taken for military service whose organs are not developed sufficiently to stand the strain. Again, the rigors of trench life light up latent tuberculous processes and aggravate slight infections, also lowering resisting powers so as to predispose to the disease in after years. The heart is exposed to unaccustomed and abnormal strain from the carrying of heavy equipment, mountain climbing, long fasting and exposure to inclement weather conditions. There is exposure to rheumatic infection of the heart with resulting endocarditis, myocarditis and pericarditis. Going back still further, we must consider the children born or being reared in such times, the terrible conditions in which they are born, the mental impressions of the mothers during pregnancy and lactation, the great spread of syphilis and consequent congenital infection of children and the horde of children born illegitimately and to diseased mothers. Young children are deprived of their proper food to feed the soldiers, thus causing inanition and rachitic conditions with a predisposition to tuberculosis and lowered resistance to other diseases. The shocks to the nervous system during the adolescent period will leave their mark in after life. Epidemics have already arisen which are difficult to check, first in the Serbian army and at present in the Austrian army, typhus, cholera, dysentery, malaria and infectious diseases including the much dreaded pneumonia. Apart from the disgraceful crippling of the present generation there will be consequences and effects lasting through many generations which will destroy after one year of war one hundred years' work in sanitary education and prophylaxis.

War and Sexual Diseases. Touton^{*} delivered an address on this subject to a mixed audience. It was, of course, foreseen that in the present war venereal diseases would play a prominent rôle, and at an early period preparations were made for special central hospitals and

(3) Berlin. klin. Wochenschr., May 10, 1915.

transportation facilities. At Wiesbaden an old garrison hospital was made over into a central station for patients with skin and venereal diseases. There were thirty beds for soldiers with these affections. This service was a very small one compared with the large hospital at Mainz with its 500 beds for the same classes of affections. The latter was favorably situated for receiving overflow patients from the Wiesbaden station, which chiefly served as a model for small local hospitals. The author quotes an estimate that the equivalent of an entire army corps has thus far suffered from venereal disease alone, *i. e.*, has been incapacitated thereby from service. These figures serve to shatter rudely the beliefs expressed by some optimists that the patriotic and idealistic emotions let loose by the war would lead to an unprecedented mortification of the flesh. The war, however, will not make German angels out of the German people.

The author, alluding to the inevitable association of Mars and Venus, mentions the alleged appearance of epidemic syphilis at the siege of Naples in 1495. Whether or not such an epidemic really occurred no man knows. It is a somewhat academic question. What we do know is that many soldiers in this campaign became incapacitated from duty as a result of venereal disease, so that the latter was spread throughout Europe. Since that period siege and occupation have been the chief occasions for the contraction of syphilis by troops. Prolonged repression of the sex impulse such as results from life on the march and in the trenches appears to be satisfied at last only in association with cruelty. The author does not refer here to attacks on the respectable women of the conquered races. Even the prostitutes are assailed with fury and in total disregard to their physical condition. Preaching, enlightenment, the author does not recognize. It does no good to tell soldiers that continence is best for them. The author would ignore this teaching, however much he may believe in its truth. He would improve certain particular opportunities. The soldier invalided home is a source of danger to the civilian population, because being in forced idleness he is thrown in among women of all kinds. The young women

idolize him, look on him as half divine. Some among them who are neurasthenics and hysterical meet him in connection with voluntary convalescent nursing. Recently, as a result of a painful experience resulting from these associations, the young women personnel in a "convalescent home for the slightly wounded" had to be replaced by men. The women were called disturbers of recovery. Aside from conditions imposed by siege and occupation the German soldier is normally more free from venereal diseases than those of other nations.

Immediate Proof of Death. M. d'Halluin⁴ recommends, as a rapid way to establish death, the instillation of ether into one eye, the other serving as control. When rubefaction appears, life is certainly present. No failure of this method has been observed by the author; he admits, however, that in the case of greatly slackened circulation, the eye might fail to redden though life might exist. A negative result is thus not absolutely conclusive evidence of death, though a positive result definitely shows life. During the test, the subject should be placed on the back, to favor circulation in the head. Icard's fluorescin test is valuable, providing a good quality of the drug is used. The solution employed consists of fluorescin, 20 grams; sodium carbonate, 30 grams, and distilled water, enough to make 100 grams. Icard's method is to inject from 8 to 10 c.c. under the skin. If life exists, the skin and mucous membranes—especially the conjunctivae and the buccal mucosa beneath the frenum—become yellowish, and the humors of the eye and the urine greenish. D'Halluin improves on this by injecting 5 c.c. (10 c.c. would, however, not invalidate the test) into a vein in one of the lower extremities. This test is extremely sensitive and the intravenous method renders it absolutely accurate for all practical purposes. A third method which the author recommends is to introduce a grooved director or blunt needle down to the heart. If the needle fails to show rhythmic movements, heart action has ceased; if the heart is still excitable, up and down movements of the blunt needle will stimulate it to resume beating. The

(4) *Presse méd.*, Sept. 16, 1914.

relatively slight danger of injuring the heart entailed in this procedure is counterbalanced by its simplicity and reliability.

Growth and Morbidity. Schiotz^s during 1913 and 1914 made physical examinations of eighty-six schools, with a total of 8727 pupils, and discusses the data thus obtained. The boys were the tallest up to the age of 11, but then the girls grew taller than the boys up to 14. At 8 and 11 they averaged the same height. The district inspected is known as the goiter region and from 3 to 12.8 per cent. of the boys at various ages and from 4.3 to 23.9 per cent. of the girls showed enlargement of the thyroid. The disposition to morbidity was most pronounced when the environment was unhygienic, and this was particularly evident in respect to goiter. About 9 per cent. of the 4459 boys had goiter and 14.3 per cent. of the 4268 girls. The morbidity, especially the tendency to goiter, was most pronounced in the periods of most rapid growth, that is, just preceding puberty. The largest proportion of children with goiter were among the taller children—in short, all the data presented confirm the old idea that children growing too fast are particularly liable to morbidity of almost any kind. Schiotz goes beyond this, declaring that even the periods of normal growth predispose to morbidity. The monotony of life in the country districts is reflected in the lesser height of country children; the nerve stimulation of city life causes city children to be more alert, the thyroid functions with greater intensity and the skeleton develops better. The country children as a rule were not so healthy as the city children. They have fresh air and fresh milk in abundance but they do not take advantage of them, and unhygienic sleeping rooms are the rule. The conditions among the children in regard to orthostatic albuminuria, tuberculosis, school anemia, heart disease, diabetes, headache, syphilis and chorea are analyzed in turn. The proportion of cases of chorea was twice as large among girls as among the boys, and occurred at a later age period.

Schiotz' figures show further that, in the northland

(5) Norsk. Mag. f. Lægevid., June, 1915.

at least, there is a seasonal difference in the growth. It is least from August to December and greatest in April and till the end of July. The children grow much taller during these latter months and the weakening influence of this predisposes to morbidity of all kinds, and yet these are the months of the "final examinations" and cramming for them. Schiotz pleads to have the school vacation begin earlier, and have the examinations changed to some other season, nor go counter to Nature as at present. He comments on the greater tendency to morbidity of girls after the age of 11. The years preceding puberty, the years of most intense growth, are trying times physically for girls, the future mothers of the race, while they work and study more conscientiously than boys. The child grows tall too fast for the rest of the body to keep pace with this development. This or that organ has not yet developed enough to take care of the extra amount of work thrust on it by the increased metabolism of the taller frame.

Was Hamlet Gouty? Sir Johnston Forbes-Robertson is said to be giving us the greatest Hamlet since Booth. The wonderful gifts of the Stratford poet are shown nowhere more brilliantly than in the fact that as each new pathologic theory of his temperament comes to light, Hamlet fits it as he did all those which preceded it. A victim of "too, too solid flesh," "fat and scant of breath," Hamlet is to us of today obviously a sufferer from the gouty or lithemic diasthesis and in grave want of appropriate treatment for the auto-intoxication caused by too heavy a meat diet and fermentation of proteins. Hamlet's indecision, his fits of temper, his alternations of humor from an excessive gaiety to the profoundest gloom, fit this new diagnosis like a glove. The picture shows Shakespeare's marvelous powers of observation, for the clinical ensemble is perfect, although in the poet's day the Prince would have been adjudged a victim of peccant humors or else as possessed of a devil. Sir Johnston, great player as he is, does not look the part of Hamlet; he is a bilious and saturnine, even if undeniably handsome and impressive figure. Fechter seems

to have been the only actor of modern times who fitted Shakespeare's description. He was indeed fat and short of breath and he wore a blond wig which gave him some real resemblance to a Dane. Fechter's physical deficiencies interfered sadly with his art toward the close of his career and more than once he was compelled to have the curtain rung down in the middle of some drama on account of a sudden attack of angina pectoris. It is well perhaps for an actor to have the physical characteristics of a rôle he is impersonating, but he must be in full enjoyment of health and strength in order to give a satisfactory rendition. This is why a young man often gives a better and more realistic portrayal of an old man on the stage than any really old man can supply; many modern managers lose sight of this elementary principle and, in their actors give us the physical picture only, with but a trace of the art required to produce illusion.

Physique and Success.⁷ The physical basis of success has been strangely neglected in medical literature, yet one has only to attend a meeting of successful doctors to be convinced that pre-eminence is largely conditioned by the possession of a physique which can stand the dreadful strains. Of course there must be brains to start with and these must be trained, but it does seem that a big powerful physique has been a deciding factor in the case of many successful physicians and particularly of the surgeons. This is not to say that a frail student short of stature must not aspire to leadership in surgery if he finds that his mental equipment is dragging him that way. Many men have attained eminence in every walk of life in spite of physical handicaps which would prevent the mediocre from ever making the effort. To a large extent in surgery it is the survival of the fittest, as the unfit drop out and those left seem to have a remarkably high average of muscular strength, stature and brains. What is more important, perhaps, is the life of almost cloistered austerity which many a surgeon is compelled to lead in order to preserve the steadiness of muscle and mental keenness so necessary in delicate operations. The world will never know the elaborate grooming some find

(7) American Medicine.

necessary—a professional beauty could not be more careful. Nor will the world ever know the personal privations necessary, such as the omission of amusements and social affairs which seem part of man's necessities. As for any excesses, it is a matter of common knowledge that they destroy good surgery and even life itself. All medical colleges make a point of giving some special instruction on the kind of personal hygiene necessary for success, but from the way such advice is ignored, it is not given in a convincing way, or perhaps most of us think that without some self-indulgence life is not worth living. We often wonder how long it takes a surgeon to recover from the effects of the tobacco smoke which fills the rooms at meetings he must attend. We would like to mention the rather handsome appearance of many a surgeon, but in case such a remark might lead the unhandsome to undue self-depreciation, let us add that good health frequently masquerades as good looks.

Foci of Inherited Syphilis in Rome Province. Campana⁸ states that in his expeditions into the rural districts to help in rooting out malaria he has frequently had groups of children brought to him for treatment of malaria who showed unmistakable signs of inherited syphilis. The promiscuous family habits and the custom of hiring out as wet-nurses have contributed to the spread of syphilis in the province. He cites a number of typical cases to emphasize the differential points and urges the necessity for specific treatment in addition to the treatment for malaria. He found signs of incipient myocarditis quite pronounced in a number, and the teeth were exceptionally fragile and malformed even when they were not of the typical Hutchinson shape.

(8) Policlinico, Aug. 30, 1914.

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